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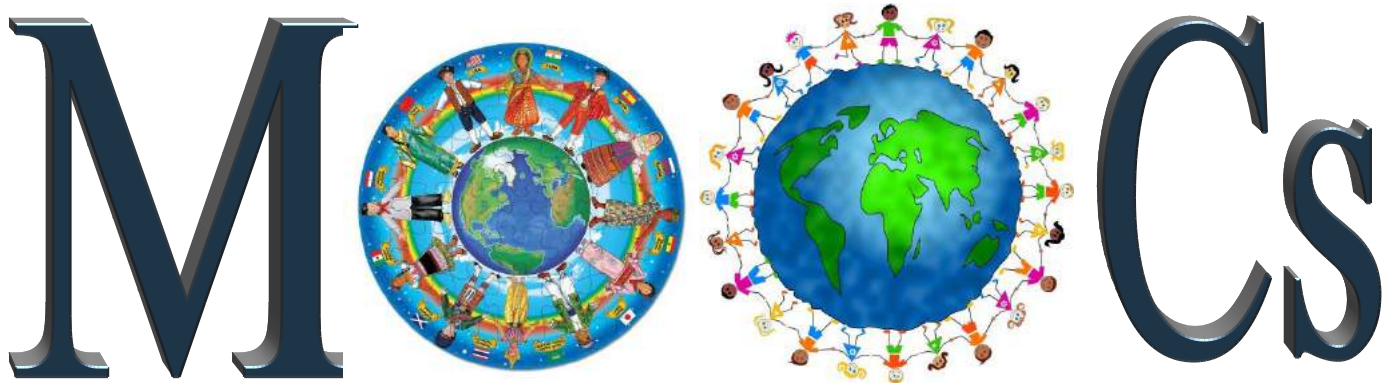
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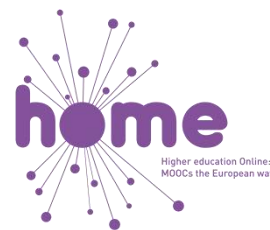
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in Europe

Overview of papers representing a collective European response on MOOCs as presented during the HOME conference in Rome November 2015

EADTU, June 2016



MOOCs in Europe

Overview of papers representing a collective European response on MOOCs as presented during the HOME conference in Rome November 2015

Editors

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EADTU, June 2016

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Table of contents

Foreword	6
Part 1: Regional MOOC initiatives	8
Building OOC layers on top of existing courses.....	9
(M)OOCs in Iceland: Language and learning communities	14
EduOpen network in Italy	19
Part 2: Role media exposure on MOOC development	25
Story of MOOCs in the Irish Media: Hold the Front Page.....	26
MOOCs in the News: A European Perspective	36
Part 3: Supporting the selection of MOOC platforms	48
Driving moocs through society: the UP2U platform.....	49
Out of the Fishbowl: Toward the Uberization of Teaching	53
Feasibility of creating a collaborative MOOC for Ireland: Opportunities and Challenges	59
The potential for using Moodle to deliver the content, facilitation, assessment and reporting of a MOOC	66
Introducing MeMOOC and Recent Results in e-Learning at University of Miskolc	75
KMOOC for Knowledge Sharing of ODL.....	79
The implementation of MeaeX the Greek MOOC platform from Hellenic Open University ...	82
MOOCs, OER, Moodle - scaling tests of Moodle software	86
Part 4: Business models European MOOCs	91
Can MOOCs be a beginning not a fad in HE	92
Governmental business models for MOOCs	98
Innovating with MOOCs: Five Mistakes, and One More	109
Is there a sustainable business model for TU Delft Extension School?	112
MOOCs as one of catalysers of big changes in HE systems	117
Part 5: Pedagogical approaches in European MOOCs	121
Opening up education - some pedagogical considerations.....	122
UNINETTUNO and the MOOCs, Origins, results and new perspectives	128
MOOC as Transmedia Storytelling	136
OpenQuest: Designing a Motivational Framework for MOOCs Instruction.....	141
The Research Results on Pedagogical Approach in MOOCs: Lithuanian Case	145
A summer-day's MOOC.....	151
MOOCs pedagogical and didactical approaches	155
How We Use Video in KU Leuven MOOCs	170

Part 6: Shared services in European MOOC context	174
Methods and Models of MOOCs Integration in Traditional Higher Education	175
How to design for persistence and retention in MOOCs?	179
Shared Educational Services for the development MOOCs, a proposal for a European collaboration.	188
Shared European Educational Services from the Perspective of Finland	211
Shared Services for MOOC Offerings: A Vision for Turkey	215

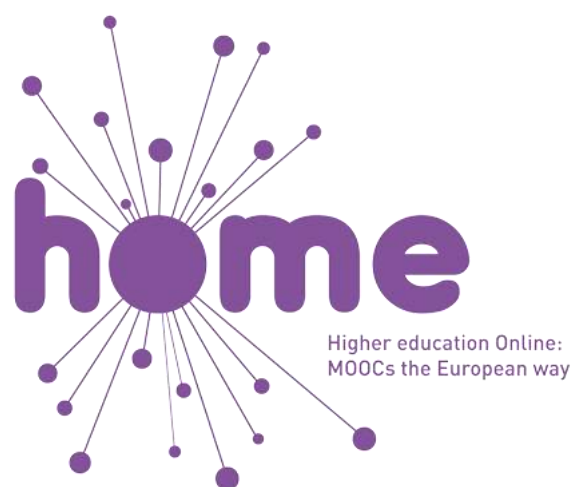
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This report is published as part of the project HOME - Higher education Online: MOOCs the European way. HOME is partly funded by the European Commission's Lifelong Learning Programme. HOME started in January 2014 and is funded to June 2016.

The aim of the project is to develop and strengthen an open network for European cooperation on open education, in general, and Massive Open Online Courses (MOOCs), in particular. The partners will build an open institutional network on MOOCs based on European values like openness, equity, quality and diversity.

The HOME project invited experts outside the partnership through an open call for papers. The HOME partners will continue to include experts during the project life time.

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Foreword

MOOCs ([Massive Open Online Courses](#)) have continued to attract considerable media coverage as governments and universities respond to the open and online education movement. The MOOCs business seems to be dominated by the big U.S. providers such as Udacity, Coursera and edX.

However, this seems to change rapidly as Europe seizes the opportunities offered by MOOCs (see [Porto declaration](#) conference organised in 2014). Early 2015 this [project revealed](#) that Europe is much more involved in MOOCs compared to the US, and that strategies to be involved in MOOCs differ as well. Since then these [results](#) were confirmed by two other studies and by the [latest HOME survey](#) repeated end 2015. These independent studies confirm that the European Higher Education Institutions (HEIs) are more broadly involved in MOOCs compared to the U.S. institutions. Moreover, it seems that European HEIs are clearly confident regarding MOOC development and implementation. The European institutions are having a more positive attitude towards MOOCs and those offering MOOCs have positive experiences.

In the framework of the [HOME project](#) - Higher Education Online: MOOCs the European Way - and in preparation for the conference on *WOW Europe embraces MOOCs*, held in Rome on 30 November 2015, an open call for papers was launched. The call invited authors to submit papers on the different conference themes. The conference was a success with a grand total 156 attendees from 21 different countries. Over 30 papers were accepted and more than 25 MOOC experts were asked to give their presentations. On top of that, the European Parliament and the Italian Ministry attended the conference in order to present their views on MOOCs.

The papers selected after a peer review process elaborate on several main topics relevant on a continued uptake of MOOCs in Europe. Europe is characterised by diversity and MOOC provision should account for diverse languages, cultures, settings, pedagogies and technologies, and it should include possibilities for localisation. The generic MOOC model will need to be re-engineered to allow for a broad spectrum of approaches and contexts. As such different regional strategies are necessary to leverage the full potential of online learning and MOOCs for education and development. *Part 1* of this report therefore discusses three different regional MOOC initiatives.

Until now, international visibility is by far the most common motivation to be involved in the MOOC developments. The huge media coverage of MOOCs are creating interest of both private and public stakeholders and often results in serious investments. As such one must not underestimate the role media is playing in the uptake of MOOCs. Recent media coverage of this phenomenon has shifted from MOOC providers and million-dollar investments towards more fundamental discussions related to strategic planning and the role of governments. In *part 2*, two papers elaborate on the role of media as well as how media is influenced by the big MOOC players.

In this context the reputation of the MOOC platform provider and the reputation of the institution are seen as important indicators for the successful uptake of MOOCs. Until now a centralised and industrial scenario is used to provide MOOC platforms to HEIs and society. This poses challenges in offering MOOCs suitable for different languages, cultures, settings and pedagogies. In Europe also some experiments are done with a collaborative–decentralised scenario (e.g. ECO, OpenupEd). In this scenario institutions of regional hub partners have their own MOOC platform, and those partners share different scalable services in the development of MOOCs and in their uptake by society. This topic seems of great interest, eight papers in *part 3* provide some support in the selection of MOOC platforms.

MOOCs are complete courses offered online for free. Thus, someone else has to pay for the efforts, the resources and most services of such a course (e.g. feedback, tests, quizzes, exams and some limited tutoring). Currently, one of the main challenges in the area of MOOCs is to develop sustainable business models. Creating and analysing a general or 'universal' business model for MOOCs is difficult. This is mainly due to the fact that several stakeholders are involved in the creation and the distribution of a MOOC, as well as research and further services beyond the MOOC itself. In addition, there is also an increasing amount of new stakeholders entering that market and new cooperation's pop up. This leads to new services, sponsorships, customers, cross-financing models, etc. influencing present business models as well. In addition it can be argued, as already seen in some European countries, that governmental involvement is needed as MOOCs (potentially) serve society as well. In *part 4* five papers present different business models in a European context.

Another main driver for HEIs to be involved in MOOCs is to learn about online pedagogy. Especially related to reach new students and creating flexible learning opportunities for those new students. In Europe many projects and initiatives are experimenting with the (online) pedagogy of MOOCs. Eight papers in *part 5* elaborate on several viewpoints on what pedagogy can provide in terms of an effective learning experience. This reflects the need to experiment in matters such as pedagogy and platform design since MOOCs are a very recent innovation, rapidly evolving and most serve a wide variety of users on a massive scale.

The ongoing evolution of technology also introduces opportunities for opening up education by providing a range of online support services. In the context of MOOCs, with their massive dimension, the important digital innovation is related to the scalability of many educational services. MOOCs are also opening up a discussion around the unbundling of such services. The economics of open and online education requires developing and delivering open products and services in partnership with others, regionally and globally. Investment in networked models (involving regional, national and corporate entities) is needed to promote open, flexible and online education for all. As such *part 6* of this peer reviewed report discusses the possibilities of shared services in European MOOC context (five papers)

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Part 1: Regional MOOC initiatives

Building OOC layers on top of existing courses

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Building OOC layers on top of existing courses

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Abstract

The case presented in this paper is founded in a Danish context and presents an approach to development of Open Online Courses (OOC) in a small language area. Developing open online education for a country of approximately 5 million inhabitants means that we cannot aim for "massive". Thus, we prefer the term "Open Online Courses", MOOCs (Massive Open Online Courses) without the M. This paper will present our approach to building OOCs on top of existing campus-based courses at Aarhus University, Denmark. Consequently, participants of an 'OOC track' will engage in collaboration and discussions with enrolled students in an ECTS course. The OOC will be designed to support different levels of participation from external students, who can chose to produce, discuss, browse or view elements of the course.

Keywords

Opening up education, cmooc, ooc, business model

1 What is the objective of open education?

First of all, we wish to challenge the focus of MOOCs on educating a massive audience. Within open education, the historical objective has been to educate people with no or limited access to the educational system, and as Bates (2015) states, an important aspect of open education is the removal of barriers for education. However, with the advent of online education and not least the Open Educational Resources movement, the focus has shifted towards "education for all" (Caswell et al., 2008; Friesen, 2009; Wiley, 2008). In the last 5 years there seems to be another shift in focus, spurred not least by MOOCs aiming towards "educating the masses". A strategy that too narrowly focuses on educating large groups is at risk of further alienating students with limited access to education.

This development is evident from the strong focus on dropout rates, and oftentimes MOOCs have been criticised for having large dropout rates (Chen, 2014, Daniel, 2012; Clow, 2013). We do not wish to advocate any singular definition of "open" (Weller 2014), but we wish to contribute to the open education debate with an approach that that is focused on opening up education to new target groups, and not necessarily the masses (Dalsgaard & Thestrup 2015). "Open" in the sense of providing open access does not in itself remove the barriers for learners. By leaving out the M in MOOCs we wish to go back to a version of the original objective of open education – to address target groups that are not supported by the traditional educational system. Thus, first of all we wish to shift the focus away from dropout rates and 'massive'. And secondly, we wish to design OOCs for specific target groups – not the masses.

2 Business models for free education: OOC layers on top of existing courses

Developing a sustainable business model for OOCs requires an alignment with key activities of the educational institution. Key motivations for MOOC development at many institutions are 1) marketing and branding, 2) pedagogical and technological experimentation, and 3) enhancing on campus education (Yuan & Powell 2013). In our business model, we will explore the third objective of connecting open online education to traditional campus-based education.

The idea presented in this paper is to build OOC layers on top of existing courses. We wish to develop the concept of *open tracks*. We are doing this by opening up existing courses to a wider public that have been able to follow the activities of the courses (Bang et al. 2014; Bang et al. 2015). The idea has been to make the educational activities transparent and visible to people outside the course. In that respect, this can be viewed as a public service and as research communication to a wider audience. However, in our development of OOC layers we wish to address specific target groups and more specifically, to design for external participation.

The specific case of our current work on designing an OOC layer on top of a course is within the educational programme *ICT-based educational design*, which is a blended learning course. We are currently designing an open track connected to a course entitled *Learning theories and technology*. An opening up of the activities within the course, forms the basis of the OOC track. The main platform for the ECTS course as well as the OOC is a blogging platform (Wordpress). Enrolled students are registered on the blog via their course, and OOC participants are registered on the blog when they sign up for the OOC.

In the regular course, teachers post assignments (on an open blog) including short video lectures and literature. Individually or in groups, the enrolled students post answers (also on an open blog) to the assignments including text, images, videos, presentations. Finally, students and teachers engage in common discussions within each of the student blog posts. These activities which are currently underway in the ECTS course, will form the basis of expanded activities for the surrounding OOC layers. Thus, the OOC track is an open and free full course experience. The OOC track will only consist of a part (possibly 6 weeks) of the regular course (about 14 weeks), but the key point is that the OOC participants will for 6 weeks participate in the very same activities as the enrolled students (in the ECTS course). This is a realistic business model for providing free educational content and activities to target groups not directly connected to Danish universities.

3 Somewhere between OER and MOOCs

The salient question is: how to design for specific target groups. A study in Jordan (2014) has shown that most MOOC participants are educationally privileged, whereas disadvantaged students are under-represented in MOOCs. Similarly, Christensen et al. (2013) shows that MOOC students are mostly well educated, and that on the other hand, groups with limited access to higher education are underrepresented. These studies highlight some of the challenges MOOCs face to actually open up education to new target groups.

As a study of subpopulations of MOOC participants in Kizilcec, Piech & Schneider (2013) shows, participants have very different objectives for their activities in a MOOC. The study identifies four prototypical types of learner engagement in MOOCs: learners completing, auditing, disengaging and sampling. Inspired by these findings, we wish to support both participants who wish to complete

course activities, including reading course materials and doing assignments, as well as participants who are only browsing for relevant input to their own practice.

The latter group will, so to speak, use the MOOC as an Open Educational Resource (OER). The difference from traditional OER is that the resources are presented within a framework of a course, meaning that they are not detached resources. They are in other words contextualised within the course. Our approach to designing OOC layers differs from traditional MOOCs, because there is not necessarily a course that needs to be followed by everyone. It should be possible to browse the resources and follow the activities of the other participants, but also to use it for one's own purposes. As Kizilcec, Piech & Schneider (2013) have shown, this already takes place. Several MOOC participants only browse around and select specific resources to use. However, MOOCs are not designed with this use in mind.

4 Layers of OOCs

The specific target groups that we have in mind for our case could be student teachers, teachers (within primary and secondary education), teacher trainers and educational designers. This group could have different approaches and interests in participating in the course. To connect to Kizilcec et al. (2013) and accommodate the different levels of participation, we wish to design different layers of an OOC that offer a variety of opportunities. Figure 1 illustrates the different layers with the existing course (with enrolled students and ECTS points) as the centre and basis for the OOC activities.

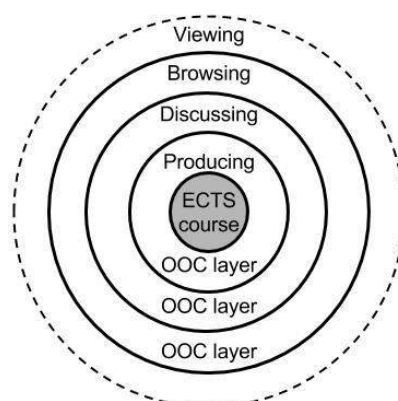


Figure 1. Layers of OOCs built around an ECTS course.

Similar to the enrolled students (receiving ECTS points), participants within the OOC are asked to produce content in the form of blog posts, diagrams, videos, etc. These products form the basis of subsequent discussions that involve both enrolled students and OOC participants. In that sense, the aim of an OOC track is to engage teachers, enrolled students as well as external OOC participants in joint discussions.

All student products and discussions will be publicly available with the intention of providing relevant content and discussions for others to read. Some participants will be answering assignments and producing content, which would be the typical completing participant. Others will perhaps only make comments and participate in discussions surrounding the produced content, which could be the case with auditing participants. As a third option, the OOC will welcome "lurkers", who will primarily browse and read the material and products, and follow the discussions (sampling and disengaged participants). Finally, since all activities are open to the public (without login), a fourth target group might stumble upon and read specific materials or discussions of relevance, without following the entire course.

It is important to stress that the open track is directly connected to the ECTS course, meaning that the regular enrolled students taking a degree are participating in the exact same activities as the participants of the OOC track. Because of this connection, the OOC does not exclusively depend on the activities of the OOC participants. Also, we will argue that expanding the activities of the existing course, will also boost the course, strengthening involvement and motivation of all involved, since the enrolled students will engage in discussions with external participants.

5 Conclusion

There are challenges and unanswered questions related to the concept of OOC tracks and different levels of participation. It is not trivial to build a meaningful and complete OOC as a legitimate and co-constructed part of an existing course, where social interaction, collaboration and community identity are nurtured. Furthermore, it remains to be seen, how successful this model will be as a nexus of connectivity for catalysing meaningful discussions and collaboration among enrolled students and OOC participants.

However, we believe the presented case and approach to development of open tracks as OOC layers on top of existing courses provides a realistic business model for opening up education in a Danish context. Within the Danish educational system, we are able to follow such an approach and open up education in this way, due to the fact that education is free. The registered full-time students are accepted on the course through numerous clauses principle and the university is financed from the state according to the ECTS points they passed in their exam. The development of the open online course for full-time students and the OOC for online learners in the open tracks are financed within the money from the state.

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(M)OOCs in Iceland: Language and learning communities

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Abstract

An overview is given of experiences of MOOCs in Iceland. An open online Icelandic language course from 2004 at the University of Iceland (UI) has been popular and remains open. A work group, formed in 2013 by the president of the UI, analysed the MOOC landscape and gathered data about students' use of MOOCs and OERs. Recommendations included trialling integration of international MOOCs in UI courses. In 2014, opportunities for participation in MOOCs were provided in four courses, in some cases as group activity with discussion of experiences. Other developments include a 2015 open online course for professional development on ICT in teaching and learning. Over 300 teachers were registered and emphasis was on the use of social media and supporting a learning community. Results from these cases indicate importance of MOOCs for professional development but the role of language, culture and learning communities needs further attention.

Keywords

MOOCs, distance education, language, communities of practice, learning communities

1 Introduction

University of Iceland (UI), the leading university in Iceland, was established in 1911 but until then, the few Icelanders who got to study at the tertiary level had to travel abroad. Graduate programs were unavailable in most areas of study until the late 20th century. The Internet revolutionised access in the country to scientific writing and research and facilitated the development of academic programs at the University of Iceland and other higher education institutions in the country. A distance learning program online with campus sessions (Jakobsdóttir, 2008) was developed at the Iceland University of Education (IUE) in the early to mid 90's equalizing access to teacher education (Jóhannsdóttir, 2010). In 2008 IUE merged with IU and became the School of Education within UI. There was a wide gap between the institutions regarding online learning. About two thirds of the 2,382 IUE students were distance learners in the school year prior to merger but only about 3% of the 9,783 UI students (Geirsdóttir et al., 2007). A work group before the merging of the two universities recommended that the UI would open access to many more of their programs for distance learners. However, these plans were not put into action, perhaps partly due to the financial crash in the country which occurred around the same time and the merger. Most UI programs and courses remained closed for distance learners. Among exceptions were UI Icelandic Online courses, first offered in 2004, which were open for anyone on a continuous basis. At the same time worldwide, online teaching and learning was developing at the university level and MOOCs emerged as a form of distance education. Institutional strategic planning in relation to MOOCs became increasingly common, and at the end of 2012 - "The year of the MOOC" the president of UI started a work group which examined the "MOOC landscape" and made recommendations for the UI in relation to online and blended learning. At that time stories had been circulating about courses in the UI engineering department where some students chose not to show up in classes, but only for final exams because they were taking similar courses for free at elite US universities (MOOCs). The following year a project group of

academics tested the use of MOOCs within UI courses.¹ These and later developments will be described further in this paper.

2 MOOCs in Iceland

2.1 Icelandic Online: courses 2004 to present

Around the world there are few and scattered learners of Icelandic as a second/foreign language (Arnbjörnsdóttir, 2004). Icelandic is a highly inflected language and challenging for beginning learners. The designers of *Icelandic Online* predicted that distance CALL (computer assisted language learning) could provide good solutions for studying small languages like Icelandic. In 2008, 13,000-14,000 students had signed up for the Icelandic Online site and there were ca. 2,300 active users and 500 daily visitors (Arnbjörnsdóttir, 2008). Recent analysis of the participation in seven courses at the site for the last eight years shows that there were about 140,000 visitors with 43,000 active learners (Friðriksdóttir & Arnbjörnsdóttir, 2015). There have been three delivery modes available for the courses: self-study online, blended mode (used on the UI campus with a tutor/in a course but self-directed); and a distance mode (online with a tutor and a fee). Preliminary findings indicated completion rates from 2% to 18% across courses. The highest retention is in the blended mode. Further studies are being planned to better understand factors influencing learners' decisions to withdraw or persist and to see how or whether the courses have supported language acquisition. The courses have had great impact on access to the study of modern Icelandic (Hafsteinsson et al., 2013).

2.2 UI work group 2013: MOOC landscape, UI strategy

The workgroup examined 14 providers of MOOCs (active in February 2013) or open courseware², which were listed on Mooc.ca³ (Hafsteinsson et al., 2013).

The majority of the providers were US-based (others from Australia, Ireland, the UK, and international/UN), and English was the main teaching language. Alison offered 500 courses (not all free, unclear how many were at the university level), Coursera offered over 300 and Udemy 260 but most providers offered 7 to 92 courses. Number of students listed in each course was variable (from one to tens of thousands). This finding resulted in the workgroup deciding to rather use the concept OOC than MOOC when translating it into Icelandic (Icelandic: "opið netnámskeið"). Pedagogical models also varied by provider with Coursera advertising mastery learning (xMOOC) and Alison interactive self-paced learning. OpenLearning and P2P learning appeared to provide cMOOCs and Udacity and edX advertised varied teaching methods. OLI emphasised learning by doing and interactive simulations. The workgroup collected data from UI students in a survey open in April and May 2013. There were 503 answers (from 14,009 registered students, only 4% participation rate).⁴ Of those who answered 12% had completed a MOOC course, 20% had explored a foreign MOOC course without completing it and 75% had used open educational content (e.g. on Youtube) in their courses. In the work group report, challenges in relation to MOOCs were discussed including finances, certification and testing, drop-out and self-discipline, and course evaluation. One chapter addressed the issue of language as it is the official policy of the UI (from 2004), supported by a 2009 national parliamentary resolution, that the spoken and written language of the UI is Icelandic in teaching,

¹ I, the author of this paper, was a member of both of these groups.

² Alison, Open Learning Initiative (OLI), Coursera, edX, MIT Open courseware, Open Learning, OpenLearn, P2P University, Stanford's Free Online Courses, Udacity, Udemy, University of the people, Wikieducator content, Open Yale Courses

³ Mooc.ca is provided by Stephen Downes and George Siemens as a place to host MOOC news and information.

⁴ These included 60% undergraduate and 74% female participants (UI statistics showed 68 and 65% respectively during the time of the study).

research and administration. The main teaching language in most programs of study is expected to be Icelandic especially at the undergraduate level. The workgroup warned against a possible trend where students, particularly undergraduates would be able to substitute MOOC courses entirely for UI courses taught in Icelandic. The recommendations by the workgroup included that each of the five UI schools would consider the design of more UI MOOCs (e.g. geology, Medieval Icelandic Studies) with special funding which would also be used to explore MOOC integration within two to three courses in each of the five schools of the UI.

2.3 UI MOOC project group 2014: MOOC integration in UI courses

The UI decided to go ahead with integration of MOOCs. At the end of 2013 a project group advertised for faculty members. Eight answered, six attended the first meeting, and teachers of four courses in the Schools of Humanities (SH), Health Sciences (SHS) and Education (SE) participated in the trial (Hafsteinsson, Geirsdóttir, & Haraldsson, 2014). The courses and associated MOOCs are shown in Table 1.

Table 1: Overview of UI courses in a trial with MOOC integration

Course (School)	No. of students	Associated MOOCs	Providers
Computers and language (SH)	12	Corpus Linguistics	FutureLearn
Biostatistics I (SHS)	5 out of 70	Statistical Reasoning for Public Health	Coursera
Learning and teaching on the Internet (SE)	12	K-12 Blended & Online Learning	Coursera
Distance education (SE)	17	Several ⁵	Coursera; University of Alaska

The experiences of the teachers and students in these trials were mostly positive. Students felt, for example, that the courses were well organised and fit well into the UI courses involved. The learning communities formed in some cases may have been important as students could help each other and were kept on track and being evaluated by the UI academic staff. In the two courses within the School of Education, students were not only taking the MOOCs for the content but also evaluating and examining MOOCs as such because the experience linked well with the main focus of the courses involved. One group of graduate students, who had all signed up for an xMOOC Coursera course, felt that even if they were very positive at first they became more critical as the course progressed. Learning was more “parrot style”, not really academic, with automatic testing and the content too much linked to US culture. However, they saw great potential in participating in MOOCs for professional development.

2.4 Other experiences: ICT and professional development of teachers

From 2014 all has been rather quiet regarding MOOCs at the UI from the administrative standpoint. However, grass root developments include continuing informal trials at the School of Education with

⁵ Two groups of 5 to 6 students all selected the same course: K-12 Blended & Online Learning. One group of 5 students selected different courses: K-12 Blended & Online Learning, Gamification, How viruses cause diseases, Digital citizenship and ethics in educational technology. One student chose Introduction to finance.

nesting of MOOCs within courses and as an option for students who need credit and signing up for independent “reading courses”, for example, in the area of ICT and media in education. An example of this is a pair graduate students (co-workers at an upper secondary school) who registered for a course on Python programming with the intent to create an OER resource for Icelandic programming teachers.

Another example is a 2015 course developed by a group associated with the Icelandic Education Plaza (Jakobsdóttir et al., 2013) which is linked to UI and supports the professional development of Icelandic teachers. The group won a grant from the Icelandic Ministry of Education and Culture to run a year long course on ICT in education for practicing teachers. The course is mostly organized like a cMOOC but in a hybrid mode. It is online (webinars, Facebook, blogs) but includes an optional campus session (4 hour) and a minimal registration fee (ca. 40 euros). Well over 300 teachers signed up for the course and preliminary data indicates that the participants have been very happy with it and this form of professional development (Thayer, 2015). A study on the course is in the planning stages. Other recent examples include an involvement of UI faculty in the Nordic Network of Adult education. The network recently did a feasibility study and recommended the design and development of a Nordic education MOOC for teachers in the field of basic skills for adults (NVL, 2015).

3 Conclusions

Smaller countries and universities have to think carefully about why and if they should design or open up courses to the world. Language is an important issue and in some cases it may be more important to focus on learning opportunities at the national or local level rather than the whole world. In that case the concept “massive” is a relative term. As an example over 300 Icelandic teachers represent about 0.1% of the population of Iceland and 6- 7% of all teachers at the primary and lower secondary level in the country.⁶ Results from the experiences reported in this paper indicate great potential and importance of MOOCs for professional development. MOOCs oriented towards smaller language areas may become extremely important and can reach a high percentage of the target groups involved even if participation is hardly on a “massive” scale. Such MOOCs could perhaps be referred to simply as OOCs. For small universities that may not be able to offer a large selection of courses MOOCs can also be very useful. However the role of language, culture and learning communities needs further attention.

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EduOpen network in Italy

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Abstract

This paper presents the EduOpen platform, created by a consortium of Italian universities in order to offer MOOC courses. The EduOpen case is described within the scenario of the MOOCs production by private and public actors. In particular, we describe the EduOpen business model that allows course providers to differentiate the costs of services sought by subscribers.

Keywords

Massive Open Online Courses, business models, online learning

1 The origins of EduOpen

In the current scenario of MOOC courses available we recognize three models for MOOC production: the national or centralized model (e.g. France Université Numérique); the industrial model, managed by private companies (e.g. Blackboard, FutureLearn); the academic model, promoted by single or associated universities (e.g. Federica, EduOpen). These models are defined on the basis of different economic and managerial aspects. At the heart of the centralized model there is the economy of scale generated by the spreading of these materials, through the reduction of the unit costs of production with the increase in the number of resources developed. The industrial model, on the contrary, is based on the private publishing initiative, funded with the investments of single companies that regulate the production, promotion and sharing/selling of materials. In the third model, finally, universities produce learning contents and deliver them across their platforms. The funding center is represented by the universities themselves, that can develop MOOC courses alone or in cooperation with other academic centers. Among the Italians examples, we can mention the portal managed by the Politecnico of Milan (<https://www.pok.polimi.it/>); the platform created by the University Federico II of Naples (<http://www.federica.unina.it/>) and our EduOpen.

Below is a summary of the peculiarities of the three mentioned models (Tab. 1).

Table 1. The three MOOCs models

	NATIONAL MODEL	INDUSTRIAL MODEL	ACADEMIC MODEL
MANAGEMENT	Public and centralized educational institutions.	Specialized companies.	Universities or academic consortia
AIM	To standardize the offer and to manage the certification system.	To select competitive proposals for the market and for the different categories of potential users.	To create training opportunities for large sections of students: accessible and shared knowledge.
TARGET	Students, professional groups.	Professional training and higher education.	Students (all levels)
FUNDING	Central government.	Industry	University
OPPORTUNITIES	Customization according to national specificities, included language.	Consistency of delivery formats of the courses. Promotional power of	Focus on the pedagogical model. Variety of subjects and

	NATIONAL MODEL	INDUSTRIAL MODEL	ACADEMIC MODEL
	Exploitation of local expertise in the different international scientific fields.	corporate actors.	actors.
THREATS	Decrease of pluralism.	Predominance of market logic.	Fragmentation and duplication of educational offerings. Academic marketing tool.

In the academic model, that is the focus of this presentation, universities produce the learning content and deliver that content through their platforms. As for the payment for the courses, in this model universities underwrite the costs by adding university funding to the payment delivered by users for such services.

The main purpose of academic platforms is to create training opportunities for large numbers of learners who would otherwise not reach universities via platforms. This is a way to make knowledge accessible and shared. The primary targets are the student population and professional groups, who have access to the courses for vocational training and academic learning. A critical issue, undoubtedly, is the fragmentation of educational offerings delivered by different universities, which often results in duplication.

The creation of the consortium EduOpen stems from the need to create high quality MOOC courses through the joint effort by a group of more than 10 Italian public Universities.

As stated in the project document submitted to the Italian Ministry, its aim is to create:

- Teaching innovation through the creation of an Italian ecosystem of MOOCs which, among other things, gives the right to ECTS through the participation of several Universities, already active within distance learning.
- A strategy of internationalization based on the offering of MOOCs in English, with the interchanging of ECTS through specific agreements with other European Universities which offer MOOCs, and through the participation of important international MOOC consortia.
- An extended action-research strategy, the first one of its size in Italy, useful for the “evidence-based” development of an Italian plan aimed at the spreading of open educational resources. In particular, it will investigate formats, interaction models, assessing techniques and the existing practices used by students, through the tools of learning analytics.
- A training opportunity for teachers and technical/administrative staff of the Universities involved, aimed at promoting the use of technology in teaching and learning processes.

As for the specific business model issue, the increase of private investment in higher education today is a consequence of the reduced ability of governments to invest resources in the sector (de Langen & van den Bosch, 2013, p. 217). The MOOC courses production involves different actors and foresee diverse income strategies, that universities too are considering. In a paper titled *MOOCs and the Future of Higher Education*, Peter J. Billington and Michael P. Fronmueller (Billington, & Fronmueller, 2013) address the issue related to the innovative nature of MOOC in a critical perspective, describing also the related economic models and indicating, among the possibilities (Ibid, pp. 37-38): the charge for taking the course; the charge for certification or credits; the students' fees for course materials, or university fees.

In a more radical perspective, the article published on The Economist *The attack of the MOOCs. An army of new online courses is scaring the wits out of traditional universities. But can they find a viable*

business model? (July 20th, 2013), also recognizes the non-existence of a unique business model for MOOC platforms and describes other possibilities for financing: venture capital, free course materials for training sector but payment for tuition, advertising on courses websites, paid content related to the course. To the possibilities described, it is possible to add (Daniel, 2012): secure assessments (invigilated or proctored examinations); employee recruitment (companies pay for access to student performance records); applicant screening (employers / universities pay for access to records to screen applicants); tutoring assignment or marking; third-party courses sponsorships; MOOC platform selling.

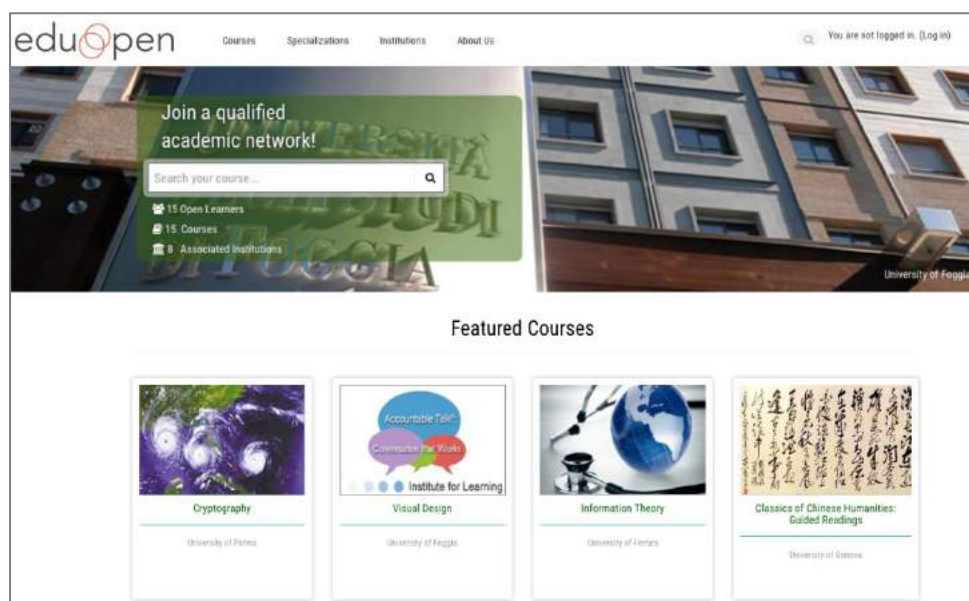
The issue of economic sustainability in the production of MOOCs (in terms of cost-revenue) takes a large parte of the debate in the public and private sectors. Nevertheless, especially for small universities, the business model is just one of the strategic issues. International visibility, promotion of educational plans and individual teachers brilliant initiatives are some elements on which MOOCs can give an important contribution.

Starting from this scenario, the EduOpen business model is briefly described below.

2 EduOpen: resources and business model

The services offered by the EduOpen platform include different access levels and diverse payment methods. Below, in Figure 1, is shown a preview of the EduOpen platform and a business model overview.

Figure 1: EduOpen platform (beta version)



The EduOpen system of access and certification can be summarized as being comprised of the following four levels:

Level 1 - Course Enrollment

- Free
- Payment for special services (i.e. individual tutoring, offering of master courses or master classes etc.). The aim of the consortium is to keep the access to courses free, at least for the first level of certification.

Level 2 - Attendance Certificate (EduOpen certificate + Badge)

- Free or delivered after a small contribution (no more than 8 € plus financial charges).
- The contributions are delivered to Edunova which will bear the certification costs.
- On line assessment
- Badge.

Level 3 - Verified Certificate (EduOpen certificate + Badge)

- Costs are due to the proctored assessment and to the issuance of the Verified Certificate.
- Contribution for the verified certificate is usually of 50 € (plus financial charges) and it is equally divided between the university and Edunova; it may be lower or higher than 50 €, following the single University costs for any special services; Edunova reduces the required quota proportionally at the discretion of the university.
- Proctored test, within universities or NICE CINECA centers. Proctored test at NICE centers: the cost is 25 € or 50 € or 75 € according to the test duration (1, 2, 3 hours).
- Badge.

Level 4 - Exam for CFU / ECTS (formal or common recognition)

- Formal registration for individual courses at universities.
- The contributions are made to the university (either totally, or with a small portion for Edunova).
- Assessment at university.

Table 1 presents a summary of certification costs.

Table 1: Summary of certification costs

	<i>Attendance Certificate</i>	<i>Verified Certificate</i>	<i>Exam for ECTS</i>
<i>Certificate</i>	Attendance level	Certificate recognized only within EduOpen network	Formal certificate
<i>Type of examination</i>	On line	Proctored test within universities or NICE CINECA centers	Assessment at university
<i>Bestr Badge</i>	Yes	Yes	Yes
<i>Costs</i>	Free or no more than 8 € (plus financial charges)	Contribution - following single universities services - More than 25 euro for proctored tests within NICE centers of CINECA, project partner	Contribution for formal registration for individual courses at universities
<i>Recipient</i>	Edunova	Partially to Edunova (up to 25 € + financial charges), partially to the host university	The contributions are recognized to the university (either totally, or with a small portion for Edunova)

The costs related to the development and maintenance of the platform occur at two levels:

1. Management and technology coordination of the platform.
2. Production and management of courses (human resources, technical equipment, administrative costs for certification).

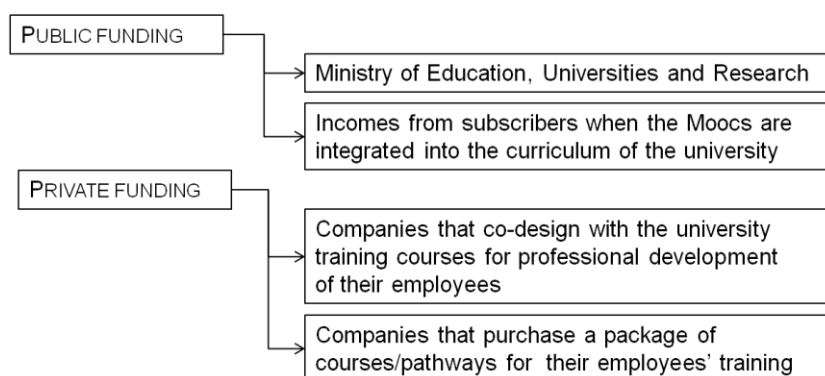
The Edunova center shall bear the responsibility related to the first type of costs and therefore will receive some income related to the certifications, representing the real form of MOOC financing, through which the system will generate revenues.

The choice of the network is to preserve EduOpen free enrollment, thus upholding the principle of openness underlying the project.

The second type of costs is held by the individual universities that comprise the network. Each university, aware of the relevance of these themes and these formats within the training and certification processes, is responsible for the generation of sustainable actions for MOOC creation and to integrate them in the regular training offer.

The main forms of financing are public and private, as shown in Figure 2.

Figure 2: Main forms of financing



The MOOCs will be integrated within different learning paths: as on line sections of traditional courses, as specialized materials in EduOpen pathways for teachers or professional training in a lifelong learning perspective, as learning resources for students to be used before or during the academic courses.

3 Conclusions

The EduOpen platform will be soon presented to the public, so the effectiveness of its business model will be detected after some months of full functioning. In the meanwhile we will develop the dialogue and the cooperation with companies for the development of professional training pathways answering the worker needs; we will work on a multi-language version of the courses and on their quality assurance of the resources in the European context. We will also work for a balance between market models and open/free education and for the overcoming of a traditional idea of e-learning, adopting innovative teaching techniques and practices, suited to the connected, transformative and ubiquitous system of contemporary learning.

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Part 2: Role media exposure on MOOC development

Story of MOOCs in the Irish Media: Hold the Front Page

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MOOCs in the News: A European Perspective

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Story of MOOCs in the Irish Media: Hold the Front Page

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Abstract

This paper reports a study of how the MOOC story has been reported in Irish media. A brief description of previous research on MOOCs in the international media is provided and the Irish story is then described framed around a number research questions: Who is telling the MOOC story and why? What story is being told? How is the story being told? Whose story is not being told? Specifically, in the tradition of critical discourse analysis the study is designed to investigate how MOOCs as a relatively new phenomenon have been portrayed in established Irish newspapers. An outline of the research protocol is given before reporting the main findings, including a number of unique developments in the Irish context. In telling the Irish story set against the wider European context the paper contributes to the debate over whether MOOCs will be harnessed in the service of truly opening up education or rather co-opted by established actors to maintain the status quo. The key message arising from the research is that the MOOC movement is not on an independent trajectory and must be understood as part of social practice.

Keywords

MOOCs, Media, Newspapers, Discourse Analysis, Ireland

1 Introduction

Claims about the promises and the pitfalls that the MOOC movement may herald for education have their roots in old debates (Krause & Lowe, 2014). As Daniel (2012) points out there is a long list of previous educational technologies that have announced themselves with bold claims to revolutionise the form and shape of education. The arguable difference with MOOCs however, is the prominent attention that major platform providers have garnered in mainstream media channels. This level of attention has in turn stoked wider public interest and fuelled intense debates ranging from doom to denial (Sherrock, 2015). The disruptive narrative over the future of higher education has brought MOOCs onto and up the agendas of academic leaders, politicians and policy-makers.

While MOOCs evolve and look to find a longer-term niche in the education eco-system, they continue to reflect a kaleidoscope of competing and co-existing discourses with very different agenda (Brown, 2015). Weller (2015) provocatively argues that we should be ready to do battle over some of the agendas attempting to exert influence over the wider openness movement. If we do not critique the deeper change forces associated with the MOOC movement, then we may be left with an image of education as “broken” with the only possible remedy emerging from Silicon Valley (Watters, 2014).

Although this line of critique overlooks major open learning initiatives elsewhere in the world, MOOCs have been posited as a solution to rising costs, opening access to traditional forms of higher education, and concerns about the private and public returns on investment, as the great disruptor. The power of scalable education through new global online learning platforms may, through their long reach, open up hitherto inaccessible opportunities for learners. Equally the MOOC movement may promote the neo-liberal goal of an unrestricted global market for higher education (Peters, 2013), along with neo-colonialism (Altbach, 2014) and the domination of particular cultural, linguistic and other Western forms of knowledge at the expense of local educational solutions.

This paper, set against the backdrop of these contrasting narratives and macro-level perspectives, briefly reviews the literature on how MOOCs have been portrayed through popular media, including newspaper stories in Australia, United Kingdom and the United States. It then describes the methodology and findings of an Irish case study of the story of MOOCs in the media, and discusses the significance of a number of particularly unique local factors, which give rise to an interesting paradox. Finally, the paper reflects on key messages emerging from this line of research, including the major threats and opportunities from a European perspective, and concludes that the MOOC movement is part of a larger, complex constellation of change forces facing the future of education.

2 MOOCs in the Media

The first study of the portrayal of MOOCs in the traditional media undertaken by Bulfin, Pangrazio and Selwyn (2014) analysed 457 newspaper articles published between 2011 and 2013 in Australia, United Kingdom and the United States. This critical discourse analysis found that MOOCs were mainly portrayed according to themes of the ‘massification, marketization and monetization of higher education’ (Selwyn, Bulfin & Pangrazio, 2015, p.175). By contrast the authors noted little debate or critique of either ‘technological’ or ‘educational’ issues and no real examination of pedagogical or learning design issues (Bulfin, Pangrazio & Selwyn, 2014). Notably, the research team concluded that the most common theme associated with the portrayal of MOOCs was in terms of a source of change. A range of metaphorical images was presented to position MOOCs as a digital agent of change, including a fast moving ‘juggernaut’, ‘online train’ and ‘rocket ship’ (Bulfin, Pangrazio & Selwyn, 2014, p.8). In contrast, in another group of media stories, MOOCs were equated with the dismantling of the university as a physical form—that is, the end for the Ivory Tower. Although the free nature of MOOCs was highlighted, the discourse analysis of media stories pointed to a lack of real examination of business models.

The major conclusion was that during the initial rise to prominence of the MOOC the media coverage portrayed a number of contradictory messages. On the one hand MOOCs are claimed to circumvent traditional models of higher education, whereas on the other hand their legitimacy as an educational innovation is primarily derived from their association with elite universities (Bulfin, Pangrazio & Selwyn, 2014). Notably, the long history of research in online and distance learning does not feature in the media. Instead the MOOC appears to reinforce the message through a virtual shop window that a real education takes place at face-to-face institutions. Thus, Selwyn, Bulfin and Pangrazio suggest that the lay-reader is likely to view MOOCs as a relatively safe new educational innovation that, in turn, reinforces long-standing status differences between universities. In this respect the media is complicit in reinforcing reputational hierarchies of top universities.

A second larger study included data up until mid-2014 and analysed 3598 articles from 591 news sources from around the world (Kovanović, Joksimovic, Gašević, Siemens & Hatala, 2015). The search strategy generated a dataset almost nine times larger than the abovementioned research. An

added feature of the methodology was use of the Google Trends service to confirm the dataset's validity and check the popularity of specific MOOC-related news articles. Methods used in the analysis involved automated topic map generation—an attempt to essentially induct themes from the raw data.

It is noteworthy that only three articles in the dataset were written before 2012. Two appear in the first quartile of 2009 and one in the third quartile of 2010. What this means is that almost all newspaper articles referring to MOOCs in English speaking publications were written between 2012 and 2014 (Kovanović, Joksimovic, Gašević, Siemens & Hatala, 2015).

A major finding of this study was that coverage of MOOCs in public media appears to be rapidly decreasing. The second major takeaway was that the focus of newspaper articles is changing around MOOCs. During 2012 and 2013 most stories focused on MOOC providers, announcements of new partnerships, and million dollar investments. According to the authors in the past year there appears to be a shift to more strategic and government level discussions focused on the macro position of MOOCs (Kovanović, Joksimovic, Gašević, Siemens & Hatala, 2015).

Two other studies warrant brief consideration. Firstly, White, Leon and White (2015) report findings from a study on the representation of MOOCs in 2014 in 106 articles in three higher education magazines: Times Higher Education, Inside Higher Education and Chronicle of Higher Education. Notably, the overwhelming majority of articles (n=57) in the sample relate to teaching practice. They found frequent articles reporting perceived pedagogical benefits for institutions when engaging in MOOCs. The theme of MOOCs as catalysts of change, especially in terms of work dynamics, was also frequently cited, with discussion of business models the third most frequent theme.

Secondly, the analysis of traditional media is now being complimented by research into discussions about MOOCs through social media. For example, Zhang, Perris, Zheng and Chen (2015) recently published a study on the public response to MOOCs on the Sina Weibo microblogging network in China. They present analytics on 95,015 postings from 62,074 users that reference MOOCs in posts between 2010 and 2015. Of particular note is that this study demonstrates the potential in the future of being able to add another layer to research on MOOCs in the media through segment analysis of big data.

In summary, the above literature has contributed greatly to raising consciousness of the media's role in shaping the MOOC debate. A gap in the literature exists, however, as there is a paucity of more detailed country-specific information. As individual regions and countries will have unique characteristics, including distinct socio-economic, educational and cultural imperatives, research is needed to better understand MOOC discourses at the local level. Therefore, the remainder of this paper presents the findings of a local case study of the positioning of MOOCs in the Irish media.

3 Research questions

The study sought to answer the following overarching question: How have MOOCs been portrayed in the traditional newspaper media in Ireland? A secondary question asked what trends are apparent over time in the portrayal of MOOCs in the Irish media? Following the critical tradition of this line of research the study was framed around a number of more critical questions on the understanding that “A story is never just a story – it is a statement of belief and of morality” (Pinar, 2014, p.12).

- Who is telling the MOOC story?
- What story is being told?
- How is the story being told?

- Whose story is not being told?
- Whose interests are being served by the story?

4 Methodology

Discourse Analysis was chosen as the most appropriate methodology for answering the above research questions. This methodology has a long history in media-related studies and draws on critical literature from social sciences, social linguistics and educational research (Rogers, 2011).

4.1 Data Collection

The Lexus Nexus database was identified as our search repository as it indexes all UK and Irish newspaper publications. Searches were performed using the keyword “MOOCs” and “Massive Open Online Course” on all Irish media stories. These were limited to Irish publications only (including both the Republic and Northern Ireland). No filter was applied to either the start or end date of stories, with the end date being current at the time of the research (i.e. end of July 2015). An initial review of these articles resulted in the removal of duplicates resulting in a dataset of 74 articles from ten different Irish news media outlets from the time period of 2012 to end June 2015. Meta-data about each article was downloaded, such as date of publication, media outlet, author etc. and the full text of each article was also extracted. These data were held in a spreadsheet to help with the analysis process.

4.2 Procedures and Analysis

A research protocol was developed to help analyse each story by drawing on the literature, in particular existing studies in this area and specifically the type of critical interpretation provided by Bulfin, Pangrazio and Selwyn (2014). A draft protocol was piloted on a randomized sample of data and the research team discussed these findings. From this initial analysis it was clear that: (a) many of the articles portrayed in the media were highly descriptive; (b) industry links was an important theme missing from the protocol; and (c) the drivers for MOOC initiatives were not always stated and when implicit they appear to reflect differing perspectives (i.e., institution, platform, author, student and industry as consumer). Accordingly, the protocol was revised with some new codes to account for these emergent themes and simplified. In light of the relatively descriptive nature of MOOC stories. The revised protocol was then used by a Research Assistant to analyse each article, which a member of the team later validated through secondary analysis.

5 Findings

While Mooney (2011) wrote a story in *The Irish Times* about MIT’s Open Courseware initiative in 2011, the first use of the term MOOC in the media (Casey, 2012) appears in May the following year. This is the only mention given to MOOCs in the Irish media in 2012, which is somewhat surprising given the *New York Times* described this as the ‘year of the MOOC’ (Pappano, 2012). A second story referring to MOOCs was published in January 2013 (Boran, 2013) in response to the UK Open University’s intention to launch the FutureLearn initiative. The third piece in the media to raise the issue of MOOCs was published the following month (Flynn, 2013) where The President of Dublin City University (DCU) called for a National digital learning strategy.

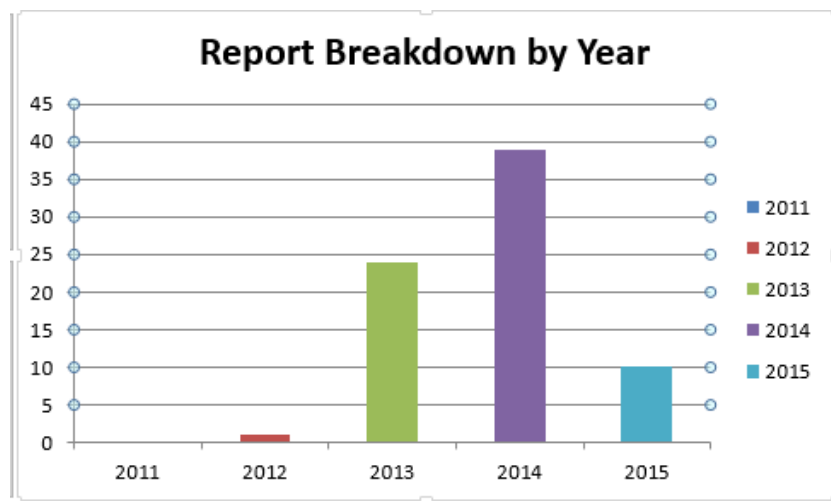


Figure 1. Breakdown of Irish MOOC media stories by year

Overall the number of MOOC stories appearing in the Irish media in 2013 (n=24) continued to grow in 2014 (n=39), and as depicted in Figure 1 by the middle of 2015 there is evidence of only a gradual reduction of news coverage (n=12).

An analysis of the stance portrayed in the media towards MOOCs indicates an overwhelmingly positive perspective (77%). As depicted in Figure 2, very few articles reflect a negative perspective (4%), with the next largest grouping classified as relatively neutral (19%). Further analysis of articles by institution type confirms the trend for media sources to focus on reporting initiatives within elite institutions (73%), which in an all-Ireland context are dominated by stories about Trinity College Dublin (TCD) and Queen's University Belfast (QUB). In many respects this finding is hardly surprising as both universities generated considerable media coverage from their own press releases when they joined FutureLearn and offered their first courses the following year. In many respects, the local profile of ALISON, an Irish-based platform, which Forbes Magazine describes as the world's first MOOC, might have been expected to generate a higher proportion of non-elite stories (21%) in the media.



Figure 2. Breakdown of media stories by institutional status

A more detailed analysis of the media data, which is beyond the space available in this paper, served to highlight three factors. Firstly, the majority of articles (70%) published in the Irish media were highly descriptive in nature. Secondly, the drivers for MOOCs are rarely explicitly stated and those stories that do mention them present a range of perspectives or underlying rationale. Lastly, industry partners need to be seen as an important stakeholder in the MOOC movement, which is something not given a great deal of attention in previous media research on the MOOC movement.

6 Discussion

The following discussion expands on the above analysis by explaining a number of unique local developments in the story being told about MOOCs in Irish higher education.

We start this section with a media story that was not reported in Ireland but rather appeared in May 2014 in the *Times Higher Education* (Powell, 2014). This story reports the National University of Ireland's (NUI) invitation to tender for a study to assess the feasibility of a collaborative National online education initiative in the Irish university sector. The article, entitled "Irish bid for a tiger share of online market", states:

The new organisation, which would include Irish universities outside the NUI group, may begin by offering a series of MOOCs showcasing Irish education. Depending on the level of public interest, the organisation could then move into profitable accredited programmes (Powell, 2014, P.6).

While the tender closed in September 2014, and a written report was expected within three months of the project getting underway, there has yet to be any public statement in response to this initiative. However, just before the tender closed a particularly interesting development occurred in the Irish context, with high-profile media coverage of a visiting delegation from Tata Consulting Services (see Figure 3).

Founded by Jamsetji Tata in 1868, the Tata Group 'is part-owned by Pallonji Mistry, the richest Irish citizen alive, and run by his son' (McCabe, 2014, P.1). The Tata Consulting Group is a global enterprise headquartered in India, with operations in more than 100 countries employing over 500,000 people worldwide. In the last quarter of 2014 a high-level delegation from the Tata Group met with senior Irish politicians and institutional presidents with the objective of making Ireland the centre of the world for online degrees (Brown, 2015). The aim, as reported by the *Independent* newspaper, was to negotiate 'a deal to transform Ireland into the world's first stop for e-learning and earn millions for the country's floundering universities' (McCabe, 2014, P.1).



Figure 3. Media story about the Tata Group in Ireland

Following the Tata delegation's visit, in early December 2014, the Irish Government's Joint Committee for Education and Social Protection held a special meeting to discuss the future of online learning. DCU was one three institutions invited to prepare a written submission and Professor Mark Brown, Director of the National Institute for Digital Learning (NIDL) gave a short presentation to the Joint Committee. Notably, DCU's submission (Brown, 2014) drew heavily on the Porto Declaration on European MOOCs (EADTY, 2014), which was developed as part of the European Commission funded HOME Project [<http://home.eadtu.eu>]. The submission noted that:

The movement is poorly defined and MOOCs are just the latest development in a long history of the use of new technologies in higher education. In many cases this history is littered with old ideas being harnessed to the latest new technologies with limited transformative advantage (Brown, 2014, P.2).

While the story of the Tata Group in Ireland is still playing out, in April 2015 a National Roadmap was published for enhancing teaching and learning in higher education in a digital world (National Forum for the Enhancement of Teaching and Learning, 2015). Surprisingly, the Roadmap makes very few references to MOOCs with this term completely absent from the Executive Summary and high-level recommendations. This omission suggests a disconnection between official policy developments and what popular media is reporting about the potential of MOOCs to change and transform higher education. Notably, there has been little or no media coverage of the National Roadmap. Moreover, to a large extent the Roadmap focuses on enhancing the traditional campus-based experience and is largely silent in terms of online, off-campus provision (Brown, 2015). Arguably, the Roadmap does little to address a major barrier to the growth of online delivery as a result of Ireland's restrictive funding model for part-time students studying off-campus.

This funding problem, which *The Irish Times* notes in a story related to the launch of Ireland's first Horizon Report for higher education (Humphreys, 2015), is somewhat ironic, especially given the Country's self-proclaimed status of the 'Silicon Valley of Europe'. Importantly, the need for inclusive funding models that help to open up education, develop more flexible modes of delivery, and diversify student populations is a central tenet of recent high-level reports on the modernisation of European higher education (High Level Group on the Modernisation of Higher Education, 2014).

An interesting paradox emerges from this brief case study of MOOCs in the Irish media, which has wider significance in the European context. Despite positive reports about the value of MOOCs and wider national and European efforts to harness the potential economic and pedagogical affordances of new digital technologies, there is almost ‘no understanding of the private and social benefits of distance and online education in comparison with those of face-to-face education’ (Rumble, 2014, p.208). Put another way, beyond personal narratives and institutional hype little is known in a quantitative sense about the wider societal benefits of investing in new online models of teaching and learning. The disconnection between what popular media and major platform providers report about the benefits of MOOCs, and the current gap in the research literature on the wider societal benefits of online education, may potentially threaten more serious efforts to invest in new models of teaching and learning. If the MOOC movement is to find a more permanent place in the education eco-system, then we need to better understand the public and private returns on investing in new models of online learning, especially as global media interest appears to be shifting to strategic policy and government level discussions.

7 Conclusion

This paper has shown that the study of MOOCs in the media is a serious line of research. It has briefly reviewed the emerging literature in this area, and reported a country specific case study and in so doing discussed the significance of particular MOOC stories within the Irish context. While a more detailed report of our analysis in response to the overarching research questions will be included in a lengthier journal article, the paper contributes to our understanding of how the MOOC movement is inherently political and needs to be understood as part of wider social practice. Despite MOOCs not having proven to be as disruptive as originally claimed, the growth of digital education and the wider openness movement are central to debates about the future of higher education. In this respect we need to “hold the front page” for deeper discussions about MOOCs framed around the question: What type of education system do we want new and emerging models of teaching and learning to serve? This question illustrates that the MOOC should be in the service big ideas rather than being the big idea in itself (Brown & Costello, 2015). There is a danger in both the US and European contexts that discussions about MOOCs have yet to engage us in thinking about the bigger challenges facing education in uncertain times.

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MOOCs in the News: A European Perspective

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Abstract

The Recent development of Massive Open Online Courses (MOOCs) commenced unprecedented interest of the general public. To leverage from the attention given to MOOCs, understanding of public discourse is essential, as it can give critical insights into the important domains of biggest societal interests. Previous research showed the great need for understanding specifics of MOOC adoption around the world and the necessity to better cater to the needs of different markets. With this in mind, this paper presents a study that looked specifically at the Europe-related MOOC discourse between 2008 and 2015. We identified important themes in the MOOC public discourse and evaluated their changes over time. Further implications of our findings are also discussed.

Keywords

MOOCs, MOOC public discourse, topic modeling, MOOCs in Europe

1 Introduction

Although there have been many advances in the educational technology field over the years, the recent development of Massive Open Online Courses (MOOCs) is particularly interesting given its large coverage in the mainstream media (Stewart, 2013a). From a small initiative by a small group of educational technology researchers, MOOCs become one of the most prominent educational technology topics (Siemens, 2012), often described as disruption or revolution in education (Hennessy, 2012). This high interest by the general public is likely due to the combination of different social, political, and economical reasons (Bates, 2014) including involvement of elite universities and Silicon Valley companies, and the overall economic climate after the 2008 financial crisis.

Although MOOCs were significantly covered by the mainstream media since the announcement of the first Stanford MOOCs, the tone and focus of those media reports changed substantially. Initially, MOOCs were presented as a revolution in education (Friedman, 2012; Hennessy, 2012), with the famous New York Times article labeling 2012 as the “year of the MOOCs” (Pappano, 2012). Later on, the discussion became more critical, with some suggesting that MOOCs failed to reach their promises (Adams, 2013; Stober, 2015), whereas others suggest that passing of the “MOOC hype” brings more productive conversation regarding the position of MOOCs in the broader landscape of education (Lewin, 2013; Muldowney, 2015; Oxenham, 2015; Stewart, 2013b). Given the large adoption of online and distance education, it is important to understand these changes in the MOOC media image in order to capitalize on the present momentum that MOOCs have brought to the educational technology domain.

The goal of this paper is to investigate the public discourse surrounding MOOCs since the first offerings of the MOOCs to the present day. Building on our previous study (Kovanović, Joksimović, Gašević, Siemens, & Hatala, 2015) that investigated global trends in MOOC public discourse, the

focus of this paper is particularly on the European perspective of MOOC media coverage. Through a systematic search of news reports, we identified 915 news reports between January 2008 and November 2015 related to MOOCs in Europe. We conducted an automated topic modeling analysis using Latent Dirichlet Allocation (LDA) technique which produced 43 distinctive topics. In this paper, we focus on top twenty most prominent topics and also investigate their change over time. The interpretation of the findings and their implications are further discussed.

2 Background

2.1 Analysis of MOOC research literature

Although MOOCs are still in early days of their development, there have been several attempts to examine current literature related to MOOC research and practice. Analysis by Liyanagunawardena, Adams, and Williams (2013) looked at the published MOOC research literature and revealed a strong focus on students' learning experience and institutional adoption opportunities and challenges. Despite various learning and social media platforms being used by the learners, researchers typically focus only on a small portion of the data coming from a single platform – as collecting and linking data from different software platforms is often very challenging – which limits the understanding of the MOOC learning processes (Liyanagunawardena et al., 2013). Furthermore, a study by Gašević, Kovanović, Joksimović, and Siemens (2014) looked at the state of the MOOC research as reflected by the submissions to the MOOC Research Initiative (MRI) (MOOC Research Initiative, 2013), revealing a fragmentation in the MOOC research community –one group of mostly educational researchers gathered around MRI initiative, and the second group of predominantly computer-science researchers gathered around ACM Learning@Scale conference. Gašević et al. (2014) results also revealed five important areas of MOOC research: i) student engagement and learning success, ii) MOOC design and curriculum, iii) self-regulated learning and social learning, iv) social network analysis and networked learning, and v) motivation, attitude and success criteria.

2.2 Analysis of MOOC public media

Besides investigation of MOOC research literature, there have been several studies looking explicitly at the public media discourse relating to MOOCs. The analysis by Selwyn, Bulfin, and Pangrazio (2015) and Bulfin, Pangrazio, and Selwyn (2014) of 457 MOOC-related news reports reveal the focus on marketization, monetization, and massification aspects of MOOCs, rather than the debate on the pedagogical or technological aspects of MOOC course design or student learning experience. The primary themes in MOOC public discourse are related to i) MOOCs bringing change to education landscape, ii) MOOCs being free of charge, and iii) MOOCs being large scale (Bulfin et al., 2014).

In their analysis of 4024 MOOC-related news articles from around the world, Kovanović et al. (2015) identified important themes in MOOC public discourse and their change over time. Kovanović et al. (2015) study revealed a rapid decrease in MOOC news coverage and the move from provider-focused discussions to more productive discussions centered around the position of MOOCs in the global educational landscape, the use of big data and analytics, and government-related regulations. The focus of current criticism of MOOCs is primarily on the failure of MOOCs to bring “the revolution” to the field of education (Kovanović et al., 2015). Finally, there has been a growing number of topics related to MOOC adoption around the world, showing the need to better cater MOOCs to the needs of different markets. With this in mind, the goal of this paper is to examine MOOC media coverage in Europe and identify prominent themes in the discourse, and their changes over time.

3 Method

3.1 Dataset

Similarly to our previous work (Kovanović et al., 2015), the data for this study is obtained through Factiva (Dow Jones & Company, 2014), which is a business information retrieval tool developed by Dow Jones & Company and Reuters news agency. Factiva is one of the largest databases of news articles, containing millions of both free and licensed news articles from around the world (Dow Jones & Company, 2014). We conducted a search for news articles written in English and containing “MOOC(s)” or “Massive Open Online Course(s)” keywords. To remove irrelevant results, we limited our search to the Europe-related news articles published between Jan 1, 2008, and Nov 15, 2015. In total, we obtained 974 search results which were then downloaded and further examined. As Factiva also contains different types of documents besides news articles, we manually examined the search results and removed the irrelevant documents which resulted in 915 articles being finally included in our dataset.

3.1 Analysis procedure

To analyze our dataset, we used Latent Dirichlet Allocation (LDA) (Blei, Ng, & Jordan, 2003), a popular probabilistic topic modeling technique used to identify prominent themes in the document corpora. We implemented our analysis in **R** programming language (R Core Team, 2013) and `topicmodels` LDA library (Grun & Hornik, 2014). LDA works by looking at the co-occurrence of words in the dataset, finding groups of words that are frequently used together and represent a distinct topic in the corpora. It is often used for analysis of large bodies of text in social sciences and humanities (Cohen et al., 2012), including the analyses of news articles (Wei & Croft, 2006; Yang, Torget, & Mihalcea, 2011).

The main input to LDA is the document-term matrix (DTM) which is a matrix indicating how many times each unique word appears in all documents in the corpora. Before running LDA algorithm, we preprocessed the data by i) removing stop-words (i.e., very frequently occurring words such as ‘a’, ‘the’, ‘be’, ‘of’ etc.), ii) removing numbers and URLs, iii) removing short words (i.e., less than 3 characters long), and iv) word lemmatization (i.e., reducing words to their base forms, for example ‘walking’ to ‘walk’). This resulted in 15,882 unique terms being extracted. However, given that most words only appear in a tiny fraction of documents, we removed all terms (i.e., columns) that appear in less than 5% of the documents (i.e., rows). This resulted in reducing the number of extracted terms down to 1,114 terms which improved the quality of the extracted topics as the data scarcity negatively impacts topic extraction procedure (Hong & Davison, 2010). Finally, after removing very rare terms, we also removed frequent, but non-important words that are not useful for topic extraction procedure. In a similar manner as in the Kovanović et al. (2015) study, we removed words with their TF-IDF score below 0.95 of the median TF-IDF value. This further reduced down our number of terms to 732 terms.

Besides document-term matrix, LDA requires the number of topics to be defined in advance. Since we do not know how many topics are in the data, we evaluated all LDA models with 2 to 100 topics and used maximum likelihood method described by Ponweiser (2012) to select the optimal number of topics. Given that this requires an evaluation of a large number of LDA models, we used randomly selected 20% of the data as input to LDA procedure. After the optimal number of topics is extracted, the new model on the full data is fitted and analyzed.

4 Results

4.1 Data collection results

Table 1 shows the number of articles across the covered years (2008-2015). We can see that before 2012, there were only 2 news articles related to MOOCs in 2009. Thus, in the remainder of this paper, we focus our investigation only on articles published between 2012 and 2015. With respect to article length, Figure 1 shows the number of words per article. The distribution of article lengths reasonably follows the normal distribution, with only a longer tail on the right (as article length cannot be negative). The average number of words per article is 716 words, and that majority of articles have between 400 and 900 words. This is very similar to the average article length of 765 reported by Kovanović et al. (2015) and not much different from the average news article length of 800 words, as reported by Project for Excellence in Journalism (2004).

Table 1: Numbers of articles per year for the period covered by the study

Year	Article count	Percentage of total
2008	0	0.00
2009	2	0.00
2010	0	0.00
2011	0	0.00
2012	76	0.08
2013	341	0.37
2014	296	0.32
2015 (up to Nov 15)	200	0.22
Total	915	1.00

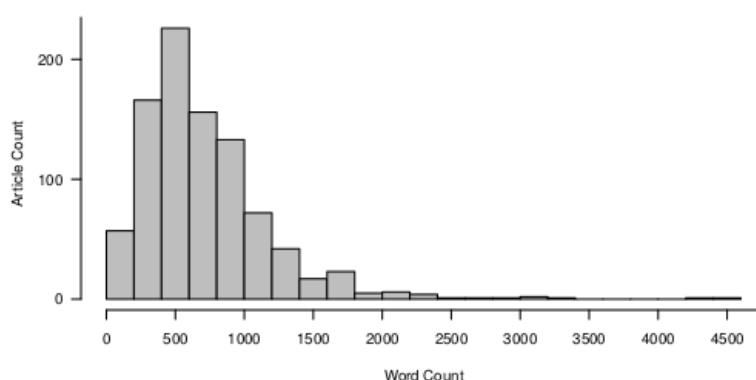


Figure 1: Number of words across all news articles. Mean(SD)=716(475) words; Median(Q1,Q3)=613(406,914) words.

Looking at sources of Europe-related MOOC news articles (Table 2), we see that news publishers from the UK were most dominant, which is not surprising given our focus on news articles written in English. Aligned with Kovanović et al. (2015) results, we find that most news source published between one and three MOOC-related articles. The most articles (99) were published by Times Higher Education Supplement, which is twice as much as the number of articles (49) published by Financial Times, the second most frequent news source. As expected, the biggest interest in MOOCs is shown by education-related publications and large national newspapers from the UK. Interestingly, the several US and Australian news agencies covered European MOOC-related news. We also see interest in MOOCs by news publishers focused primarily on business and finance (i.e.,

Financial Times, Mena Report, Australian Financial Review) which is the trend also witnessed in the previous studies (Kovanović et al., 2015).

4.2 Topic modeling results

In order to select the optimal number of topics, we evaluated all topic modeling solutions having between two and hundred topics (Figure 3). Our analysis identified a solution with 43 topics as the optimal one, which was the one that was used in the remainder of this paper. We used 43 topics to fit the model on the all 915 articles and assigned each article to one of the 43 identified topics, based on the assigned log-likelihoods (Figure 4). In rare cases where it was equally likely that a given article belongs to two or more topics, we assigned a given article to all of the most likely topics found. Looking at Figure 4, we can see the steep decline after the top three topics – indicating that they were significantly more covered in the news than other topics – while the remaining topics show a much more monotonic decrease in the coverage. With the goal of covering as many relevant themes as possible in the limited space, in the remainder of this paper, we focused on the top twenty most prominent topics. Overall, top twenty topics cover just slightly below two-thirds of the 915 articles in our dataset. To describe each of the topics, we looked at the assigned documents and the list of words mostly associated with each of the topics.

Table 2: Twenty most prominent news sources

#	Source	Articles	#	Source	Articles
1	The Times Higher Ed. Supp.	99	11	The Irish Times	18
2	Financial Times (FT.Com)	49	12	The Sunday Times	18
3	The Guardian	47	13	PR Newswire (U.S.)	16
4	Financial Times	31	14	PR Newswire Europe	14
5	Press Assoc. National Newswire	30	15	Mena Report	13
6	The Telegraph Online	30	16	The Independent	13
7	M2 Presswire	23	17	The Times	12
8	ENP Newswire	22	18	Independent Online	11
9	Education Letter	21	19	Australian Financial Review	11
10	Guardian.co.uk	18	20	Sundaytimes.co.uk	10

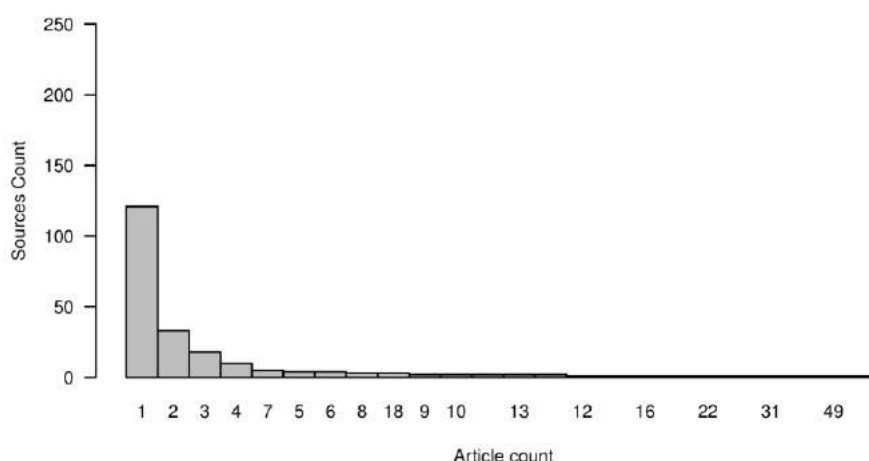


Figure 2: Number of articles across all news sources included in the study. Mean(SD)=9(9) articles; Median(Q1, Q3)=1(1,3) articles.

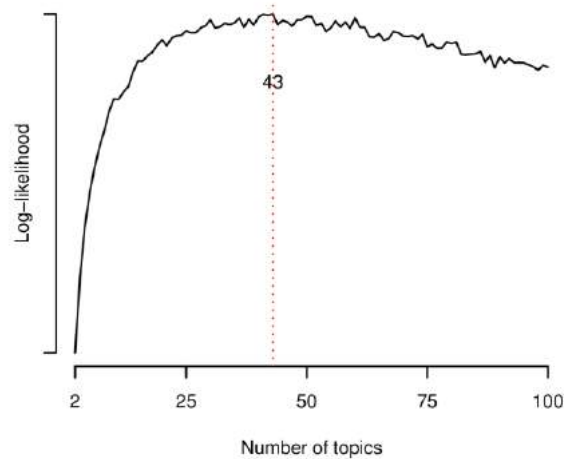


Figure 3: Log-likelihood of different topic solutions.

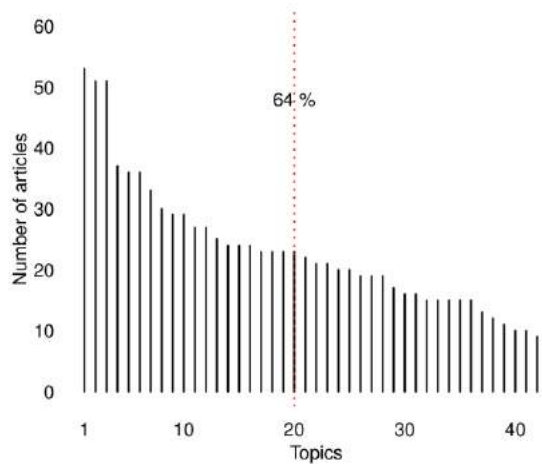


Figure 4: Number of documents per each topic.

Table 3 shows the list of top ten most relevant terms for the twenty most prominent topics. Based on the identified terms and associated news articles, we defined labels for each of the twenty topics. Looking at the Table 3, we can see that three topics that were mostly covered in published news sources are related to i) FutureLearn, a UK-based MOOC platform supported by the Open University UK, ii) business and management (MBA) MOOC offerings, and iii) the “MOOC revolution” led by the Coursera, Udacity, EdX and elite institutions such as Stanford University. Besides these three topics, commonly discussed topics are related to:

- Use of MOOCs for K-12 education (i.e., primary and secondary education),
- Changes in university funding due to wide availability of MOOC courses,
- MOOCs in Ireland,
- Announcements of different MOOC courses,
- The impact of MOOCs on the global educational market
- Press releases related to openSAP, the MOOC platform developed by SAP,
- MOOC signup figures, primarily related to UK universities,
- Introductions to MOOC courses and mechanics of online education,
- Articles discussing different research reports related to MOOC space,

- MOOC in France,
- Development of books and written materials for MOOC contexts,
- Use of MOOC for workplace training,
- Changes in the private educational sector caused by MOOCs,
- Announcements of British Council MOOC for teaching The English language,
- MOOC market,
- Different European initiatives related to MOOCs, and
- Announcements of MOOC-related conferences.

Table 3: Ten most relevant terms for the twenty most prominent topics

#	Topic Label	Articles	Distinctive Terms
1	FutureLearn	53	futurelearn, nelson, partner, leed, warwick, bbc, learner, simon, east, bristol
2	Business and Management MOOCs	51	business, school, mba, management, dean, finance, ma1ster, prof, manager, case
3	MOOC revolution	51	coursera, stanford, credit, udacity, sign, certificate, completion, venture, enrol, edx
4	MOOCs for K-12 education	37	school, teacher, pupil, lesson, child, computing, resource, curriculum, classroom, secondary
5	MOOCs and university funding	36	government, funding, tuition, sector, pound, loan, overseas, fall, private, target
6	MOOCs in Ireland	36	distance, irish, ireland, trinity, postgraduate, dublin, tutor, history, qualification, law
7	MOOC course announcements	33	vice, chancellor, david, bean, minister, willett, martin, sir, december, widen
8	MOOCs and global educational market	30	china, profit, american, campus, elite, america, accord, emerge, expand, mass
9	openSAP press releases	29	com, www, http, press, visit, newswire, release, solution, announce, business
10	MOOC signup figures for UK universities	29	london, edinburgh, join, sign, oxford, king, principal, australium, september, vice
11	Explaining MOOC course structure	27	video, forum, website, peer, assignment, exam, grade, youtube, user, quiz
12	MOOCs research reports	27	news, report, accord, additional, contact, editor, obtain, article, journal, learner
13	MOOCs in France	25	edx, platform, france, french, national, source, october, january, announce, massachusetts
14	MOOCs & books	24	book, story, claim, tell, hour, read, word, history, predict, educate
15	MOOCs for training	24	skill, training, employer, career, qualification, professional, scheme, workplace, employee, national
16	MOOCs & changes in educational sector	24	per, cent, service, face, sector, survey, process, average, march, office
17	British council MOOCs	23	british, council, library, museum, futurelearn, debate, english, announce, activity, cultural
18	MOOC market	23	market, industry, report, trend, investment, sector, analysis, growth, company, product

19	European MOOC initiatives	23	europe, european, resource, commission, initiative, innovative, unit, ensure, formal, adopt
20	MOOC conferences	23	conference, event, educator, foundation, contact, present, communication, worldwide, meeting, discuss

Besides identifying most frequently discussed topics, we examined the dynamics of their coverage over time. Figure 5 shows the changes in coverage for the top twenty topics across the 2012-2015 period. Interestingly, for many topics we see the steep decline in their coverage, in particular for the top three most discussed topics in our corpus. In contrast, some topics – such as the coverage of MOOC reports, university funding, openSAP, use of books, use of MOOCs for training, and MOOC market show an increase over time.

5 Limitations

There are several limitations related to our study. First of all, we used the data that was available on the Factiva information retrieval platform, which – despite being one of the largest databases available – is still not a complete set of MOOC-related articles. This is particularly true for the articles published in 2015, as the Factiva database is slightly lagging behind the actual news publishers. Next, although the use of fully automated analysis procedure has many advantages including the ability to analyze hundreds of news articles in a quick and easy manner, the level of sophistication that can be achieved by the expert researcher is still higher. Thus, similarly to Kovanović et al. (2015) study, we argue that combination of smaller but more detailed analysis – such as the ones by Bulfin et al. (2014) and Selwyn et al. (2015) – and the automated analysis like the one presented here provide necessary insights to the complex nature of MOOC public discourse. The adopted procedure also depends on the several preprocessing steps and algorithm parameters, the primary one being number of topics to extract which both can have an important impact on the final results of the analysis

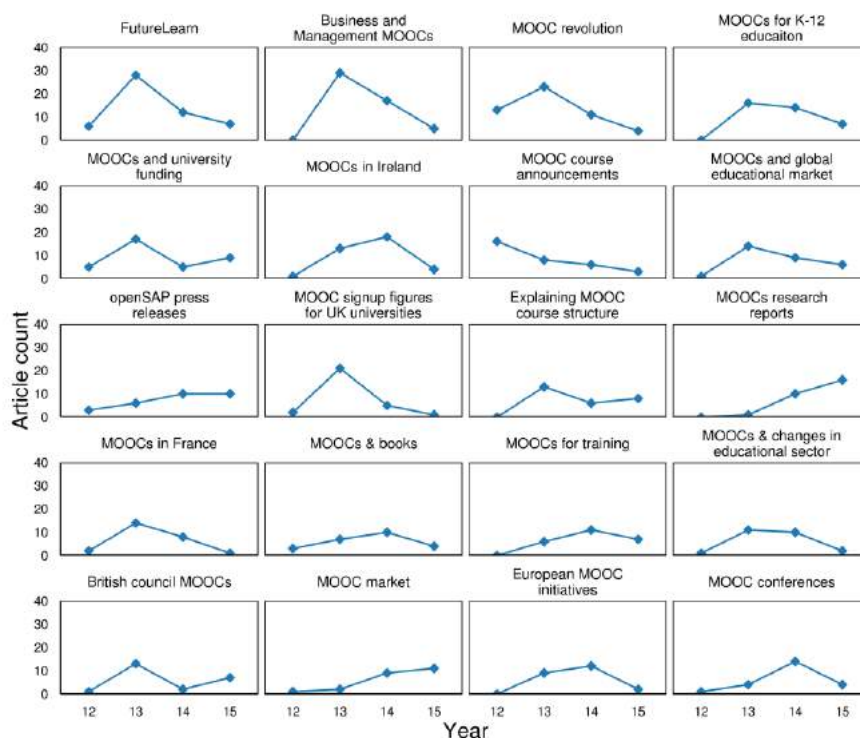


Figure 5: Change in coverage of top twenty topics over the 2012-2015 period.

Finally, although having the focus on the whole Europe, we used only articles that were written in English, which distorts a final image to more UK- and Ireland-related topics. In our future work, we plan on investigating articles written in other European languages to provide a more comprehensive overview of the European MOOC public discourse. One promising direction is to use automated translation services such as Google Translate to translate all articles to English before running topic modeling procedure. Although not perfect, those automated translation services could provide a translation which is accurate enough so that an accurate document-term matrix could be extracted.

6 Discussion

Looking at the results of our analysis, we see many similarities with the previous results reported by Kovanović et al. (2015). As expected, a large portion of public discourse has been about “MOOC revolution” and the anticipated changes in the educational domain. Also, given the large amounts of money being raised by MOOC companies, we also witness many financial and business-oriented publications reporting extensively on MOOCs affairs. This also explains why MOOC providers and business and management MOOCs are extensively covered in the public media. This focus on financial aspects of MOOC triggers a question of how much research in online learning is underpinning the development in MOOC space, and how much it is driven by the marketability, particularly in the case of for-profit MOOC providers (Kovanović et al., 2015).

We also see the decreasing trend in MOOC coverage over time, albeit to the lesser extent than reported by Kovanović et al. (2015). One likely reason is the slightly slower adoption of MOOCs in Europe which resulted in peak of “MOOC hype” cycle being shifted. Thus, based on results of this study and Kovanović et al. (2015) study to continue to see a declining trend in MOOC coverage in Europe in the following years. We also see a number of topics related to MOOC use in UK, Ireland, and France, which is aligned with the results by Selwyn et al. (2015) and Kovanović et al. (2015). We also see large coverage of smaller MOOC platforms, such as openSAP from non-English speaking countries, which is also an indicator of the importance of MOOC adoption to the different user populations, markets, and economies.

Although a large number of topics saw a decline in their coverage, a certain number of topics show a trend of rising coverage over time. For instance, changes in university funding due to the introduction of MOOCs saw a decline between 2013 and 2014 but saw a second increase during 2015. As MOOCs became more mature, there has also been an increase in the number of MOOC-related reports, development of different MOOC books and learning materials, and discussions related to the use of MOOCs in the context of workplace training. This indicates that the public discourse of MOOCs is moving towards more productive analysis of instructional aspects of MOOCs and the positions that MOOCs might play in the overall educational landscape and the need for current universities to adjust to this new market organization.

7 Conclusions

This paper presents a study that looked at the Europe-related MOOC public discourse. We analyzed 915 English language news articles obtained through Factiva platform using automated topic modeling technique previously used by Kovanović et al. (2015). Unsurprisingly, the most MOOC-related articles (99) have been published by Times Higher Education Supplement. Besides education-focused publications, several financial and business newspapers extensively reported on European MOOC affairs. Alongside several UK daily and weekly newspapers, we see large coverage of European MOOC news in the US and Australian newspapers. Using Latent Dirichlet Allocation (LDA), we found 43 distinct topics in our dataset. Aligned with Kovanović et al. (2015) results, we see a move from

broad discussion of MOOCs and MOOC providers to more constructive discussion related to MOOC adoption and their position in the educational field. The three most prominent topics were related to FutureLearn MOOC platform, Business and Management MOOCs, and “MOOC revolution”, which all suffered a large drop in the coverage in the last two years. In contrast, we see an increase in coverage of some other topics, such as the discussion of MOOC research reports, analysis of MOOC markets, use of MOOCs in primary and secondary education, and changes to university funding initiated by MOOCs.

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Part 3: Supporting the selection of MOOC platforms

Driving moocs through society: the UP2U platform

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Out of the Fishbowl: Toward the Uberization of Teaching

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Feasibility of creating a collaborative MOOC for Ireland: Opportunities and Challenges

Michael Hallissy
H2 Learning

The potential for using Moodle to deliver the content, facilitation, assessment and reporting of a MOOC

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Introducing MeMOOC and Recent Results in e-Learning at University of Miskolc

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KMOOC for Knowledge Sharing of ODL

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The implementation of MeaeX the Greek MOOC platform from Hellenic Open University

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MOOCs, OER, Moodle - scaling tests of Moodle software

D. Marchewka, J. Urbaniec
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Driving moocs through society: the UP2U platform

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Abstract

The Polytechnic Institute of Leiria launched in March 2014 its own MOOCs platform. This initiative, faced as a challenge for innovation and development, aimed to provide additional training for students and staff and to promote new means of knowledge transfer into society. UP2U is an open platform, allowing any people to either register in the platform or simply log via a regular Google account or an IPEiria account. UP2U courses are completely online and don't require active tutoring. They are planned by multidisciplinary teams with scientific, pedagogical and technological skills. Until now there were 28 courses launched in UP2U, reaching 4300 users that come from 74 different countries.

Keywords

MOOC, e-learning, Higher Education, open learning, online training

1 Introduction

E-learning strategies are become more essential in modern educational activities (Griffol, 2010) and colleges and universities must deal with a significant paradigm shift in the meaning and practice of education in the new information age (McEachron, Bach, & Sualp, 2012). Since 2012 when MOOCs interest rose in higher education, MOOCs have promised to fundamentally transform education and are driving an open challenge to all current methods of higher education system such as online training, open learning methods and distance education system (Nath, Karmakar, & Karmakar, 2014).

In this context, making use of our experience on offering e-learning and b-learning programmes and our experience in driving massive online courses through the iTunes U platform, the Polytechnic Institute of Leiria (IPEiria) launched in March 2014 its own MOOCs platform - the UP2U platform (www.up2u.ipleiria.pt).

The creation of our own MOOC platform (UP2U) had three main goals: to discover new ways to provide additional and informal training to students and staff; to promote new means of knowledge sharing and transfer into society, while disclosing our best practices; and to give to our academic and technical staff a challenging scenario for innovation and development of new methods and tools. As pointed out by Yuan and Powell (2013), more flexible models and open approaches will encourage more mature students to participate in higher education.

2 The UP2U platform

UP2U provides a simple structure which focuses on making course access and enrollment steps as simple and direct as possible. The homepage view has an up-to-date course list that is continuously growing into different knowledge areas and topics (see Figure 1). It allows users to either register in the platform or simply log via a regular Google account or an IPEiria account. Immediately after registration, users can freely access into any course available in the system.



Figure 1: UP2U homepage

UP2U courses are all completely online, using multimedia tools like video, small HTML web modules, images and documents. These courses are built so they won't require active tutoring. Communication between participants is possible using discussion forums, allowing autonomous and flexible participation in a spirit of mutual assistance and cooperation between peers. Educational resources and activities are carefully planned by multidisciplinary teams with scientific, pedagogical and technological skills in order to promote the acquisition of knowledge, allowing skill testing, evaluation and virtual interaction with fellow participants.

3 Results

Since March 2014, 28 new courses were created in UP2U (see Table 1), with a total of 7178 registrations. Most popular courses were "Creative presentations with Prezi" (1039 learners), "Creating and sharing through mind maps" (1033 learners), "How to avoid plagiarism?" (908 learners), "Structure a course on Moodle" (630 learners), "Time management" (508 learners), and "Making and sharing videos in educational contexts" (459 learners). Courses related to specific knowledge areas as "Getting to know WCAG 2.0" (460 learners, 3 editions), "ADLAB introduction to film audio description" (119 learners), and "Accessible digital documents and signatures with citizen card" (115 learners), tend to have less registrations. Most courses were taught in Portuguese. There is also an English version of UP2U where only two courses were launched in English ("ADLAB Introduction to film audio description" and "Getting to know WCAG 2.0").

Table 1: Examples of Moocs launched in UP2U platform

Name	Language	N. Editions	Learners
Creative presentations with Prezi	PT	2	1039
Creating and sharing through mind maps	PT	4	1033
How to avoid plagiarism?	PT	3	908
Structure a course on Moodle	PT	2	630
Time management	PT	1	508
Making and sharing videos in educational contexts	PT	1	459
Getting to know WCAG 2.0	PT	3	460

UP2U courses were dated on calendar, so after a few months an updated edition of each course could be launched again with some adjustments made up on given report (drop-off rates, evaluation questionnaires).

Most courses launched in UP2U were authored by institution's services that traditionally are responsible for staff training and student soft skills development (Psychologist office, Library staff, and ICT support staff). Conventionally these services used to organize classroom workshops attended by 20-30 participants, but when using UP2U they were able to reach a much larger audience. For example, the course "Time management", that aimed to help students to deal with their study tasks and study methods and used to be held in classrooms, got 508 participants in just one online edition in UP2U.

These reuse of classroom workshops into web massive courses had also the advantage of making possible to continuously launch over time new courses in UP2U (see Figure 2). Institution's teachers and staff that authoring UP2U courses had technical and didactic help from a multidisciplinary team specialized in e-learning tools and methods. Moocs are a great scenario for innovation and over time new tools and new methods are being tested and improved.

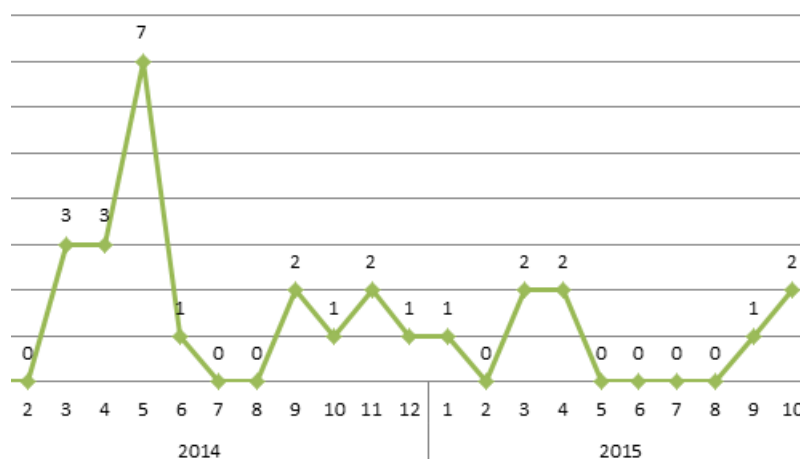


Figure 2: Number of new courses by month

The number of UP2U users had growing over time, reaching more than 4300 users. Most users are Portuguese (93%) and tracking their login credentials we estimate that 72% of them are from our institution (students, teachers and staff). These results show that there are over than a thousand users external to our institution and that UP2U is a mean to support knowledge sharing into society.

Foreign users come from 73 different countries (see figure 3). Most popular countries are Brazil (3%), UK (0,5%), Spain (0,5%), Angola (0,4%), USA (0,3%), Mozambique (0,2%), Switzerland (0,2%), France (0,2%) and Green Cape (0,2%).

Out of the Fishbowl: Toward the Uberization of Teaching

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Abstract

In terms of recent innovations affecting the Higher Education sector, two are generating significant interest: the creation and delivery of MOOCs as Open Education Resources, and the concept of the flipped classroom, a pedagogic approach whereby the roles of teacher and learner change and focus is transitioned from the teacher to the learner. Although the connection between the two may not be immediately obvious, they represent different sides of the same coin, and they can be brought together in a blended learning approach. This paper aims to show that using MOOCs in a context of flipped (blended) approach can help to evaluate the potential impact of MOOCs in a changing society. The following paragraphs are based on a non-systematic observation of disintermediation phenomena in the context of various educational experiences during the pilot phase of the Emma Project¹, accordingly to its objectives and challenges.

Keywords

MOOC, Flipped classroom, teacher role, Uberization

1 The disintermediation force

The educational system has been one of the last to be affected by the radical changes that technological innovation brought to processes of knowledge transfer. These changes can all be ascribed to the category of “emancipation”. We have seen that the huge disintermediation force of the new communication technologies is enough to break down existing structures and replace them with different frameworks and, in the process, modify the relationship between the actors involved. This has happened in politics, for example, where internet-based media, especially social networks, enable political leaders to interact directly with the electorate, and also enable digital citizens to become political actors in their own right (Katz 1988, De Rosa 2011).

Two of the changes affecting the educational sector that have received significant interest are the creation and delivery of MOOCs and Flipped Classrooms.

The literature on MOOCs has identified several factors that have led to the success of this new form (and format) of online learning. Their potential for scalability, for democratising education and for improving on-campus tuition have put MOOCs at the centre of public debate in the last 3 years (Koller and Ng 2012; Bull 2013, Siemens 2013; De Rosa and Reda 2014). The media interest around MOOCs testifies to the growing pressure that education systems are under from the market, from politics and from society itself to respond to current challenges and provide an effective response to global education needs (eg in BRIC countries) and to produce better citizens.

The concept of flipped classrooms was introduced much earlier than MOOCs, and developed from theories of peer instruction (Mazur 1997) and the idea that individual learning style should form the basis of a more personalised teaching approach. Various experiments have taken place at both primary and secondary school level (i.e. Bergmann and Sams 2012). A recent literature review

(Hamdan et al. 2013) on the Flipped Learning model provides support for the efficacy and potential of the method, while the later extension to this paper evidenced improved student performance and learning outcomes in specific degree courses, and positive student perception in a questionnaire sampled with 456,000 learners in USA. Teachers appreciate the increased time available for more participatory and active learning (Yarbro et al 2014)

Although these two phenomena may not at first sight appear to be linked, they both have the same origins – in virtualisation of processes – and a common destiny (Brooks 2012). We would like to show that both occur as a result of the affordances offered by technology, and both result in the fragmentation of the different processes involved in education and learning. This fragmentation, what is now commonly-known as “unbundling”, of the system represents, in fact, on the one hand, the progressive emancipation of educational methods from educational content – which is ever more open and accessible – and, on the other, the emancipation of the leading players in the educational process – teachers, students, academic institutions - from each other.

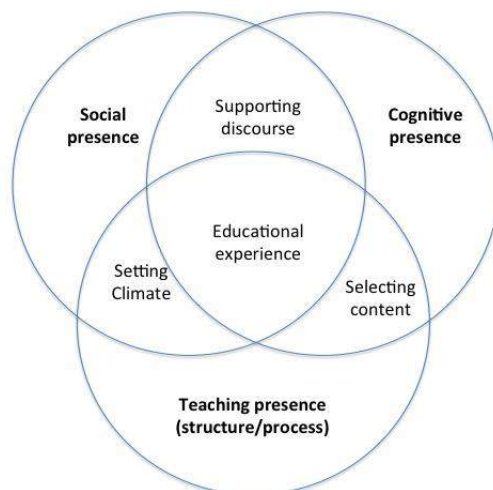
2 The community of Inquiry Model

How do these emancipatory forces play out? To explore how the unbundling of the system works, at a micro level first, let's take a case of the introduction of MOOCs in a blended classroom. This is also a case of a hybrid environment where:

- [?] MOOCs are widely available and used
- [?] Blended learning is the new formal setting in academic education

Although still considered crucial, the role of the teacher in blended learning is different from that in the solely on-campus or online environment. Introducing a MOOC in such an environment means adding a new element in an already complex learning ecosystem that will play a game changer role. Anderson, Rourke, Garrison and Archer (2001) using Dewey's Community of Inquiry model, make references to the online environment and different online teaching presences, stating that “the concept of teaching presence is constitutively defined as having three categories – design and organization, facilitating discourse, and direct instruction” (p.1).

A few years later, Anderson (2004, p 273) organized these roles in a graphic model showing that deep and meaningful learning results when there are sufficient levels of three components but overlapping “presences” which she termed social, cognitive and teaching, as illustrated in the diagram below (Fig. 1).



Communication Medium: Teacher role in online conferencing (Anderson et al. 2004)

Figure 6

As we see from the Athabasca *Community of Inquiry* Coding template, the element that is fundamental to success in this model is the cognitive presence which refers to learner interaction with the learning content and the extent to which the participants in the community of inquiry are able to construct meaning through their interaction. It can be recognized by behavior like exploration, connecting and application of new ideas. The second core element is the social presence, which is about open communication and group cohesion to create a supportive context and facilitate critical thinking within the community. The third element is the teacher presence which is recognized in the design and development of the learning activities and assessment as well as the role of facilitation, defining and initiating discussion topics and focusing the debate.

2.1 Teacher role in fast changing society

Our observations were carried out in an HE blended learning situation where the MOOC was embedded in the regular curriculum as a new component of the learning process. We can apply the same Community of Learning model to a MOOC virtual learning environment but it has to be remembered that MOOCs come with their own media format and instructional design, which may alter the balance of the three components identified by Anderson. Although cognitive presence and teaching presence may be comparable to that of other online environments, the amount and type of social presence, or even peer interaction, encouraged by any MOOC varies according to where on the cMOOC – xMOOC continuum it lies, and the amount of tutoring input as well as variety of community-building tools, features and activities it includes. When MOOCs scale up to really include massive numbers of learners, roles typically associated with teachers, like assessment/assignment review and stimulating and guiding discussion are frequently taken on by participants. However, if we look at the use of MOOCs in the context of flipped learning, we might imagine that the face to face component provides an opportunity to redress the balance with social presence. Our observations indicated, on the other hand, that there is another difference that we should take into consideration where a MOOCs learning environment is concerned: the possibility that the teacher no longer has a monolithic role. The teacher presence can be altered as it is forced to act and react to an external teacher presence in the form of the MOOC teacher, who often has a diverse academic position and level of authorship. In other words, the level of teacher “presence” in a blended class would seem to depend – among other variables – also on the degree of MOOC authorship and academic status, thus determining at least four different scenarios:

- a) The on-campus teacher is also the MOOC author
- b) The on-campus teacher is not the MOOC author
- c) The on-campus teacher has the same academic status as the MOOC author
- d) The on-campus teacher does not have the same academic status as the MOOC author

In a blended classroom, in fact, the expert who has developed the MOOC may also be responsible for teaching the on-campus class. In this case, his or her role is about interpreting their own teachings, and encouraging reflection with the class on their own theories and ideas, setting a receptive climate. The result is largely knowledge transfer and the teacher makes little use of the teaching skills listed above, confining himself to a more cognitive presence. We called this kind of teacher role *interpreter*.

In other situations, the MOOC developed by an expert in the field is actually used by another teacher who is an authority in the field in their own right. The teacher in this case feels confident about their own position and able to convey their own teaching and ideas using the original MOOC as a springboard, or prompt reflection through comparison between their own ideas and the original content. Here the teacher does not confine him or her self to a cognitive role, but is able to support

plural discourses and stimulate learning in a complex way. The term we gave to this kind of teacher role is *coach*.

In other classrooms, the MOOC that is used is that of an expert in the field, but the teacher of the on-campus course does not have the same academic position or level of prestige. Here the teacher uses his or her own skills to simplify and explain content, guiding the class through concepts, paradigms and resultant reflection in a more collaborative environment. The teacher sets a learning climate with a stronger social presence. We can call this kind of teacher a *facilitator*.

Finally, we have the last scenario, where the MOOC is simply learning content to be used by a teacher with high levels of the kind of teaching skills - stimulating thought, guiding learning processes, providing support and trust – that help to achieve good learning outcomes and better citizens. This kind of teacher does not experience any sense of loss of institutional legitimacy as they have emancipated themselves from the “traditional” academic role of content producer and are confident about the content produced by others. They have developed particular educational skills and communication capabilities that use to apply on a collective as well as individual basis. This scenario is one of the most interesting because it highlights the emergence of a new and - at the same time - very old teacher role: the mentor. We can plot these new teacher roles on a matrix with status and authorship forming our two axes (Fig 2).

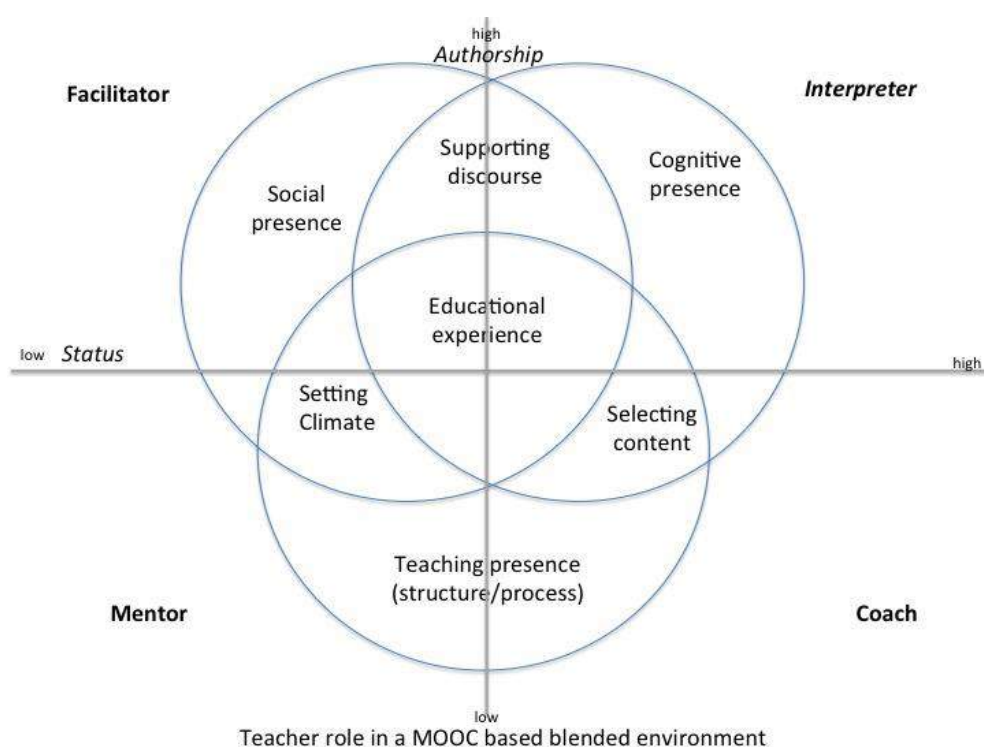


Figure 7

In the *top left quadrant* we have high teacher status but low authorship so the *coach*, whereas in the *top right quadrant* we have high authorship and status, ie the teacher is also the author of the MOOC, the *interpreter*.

The *lower left quadrant* represents low authorship and low status, the *mentor*. In the *lower right quadrant* we have an expert author with a lower status on-campus teacher, the *facilitator*.

Although our matrix cannot be easily overlaid on the Anderson diagram, we can insert the different teacher roles we identified into the diagram as shown below.

2.2 The emerging of “brand old” role

The mentor considers the learner as an individual able to find his/her own way to learn if self-motivated and wisely guided. The mentor/teacher can work in a more complex educational ecosystem that is not reduced to the academic institution but tends to be wider, like the social community itself. The educational sphere includes both the teaching, social and cognitive presence but is not specifically related to any of them, since the mentor’s mission is educating in a broader sense (Fig. 3). On the other hand, where the flipped classroom has a mainstream role the teacher is transformed into a *game changer* (Bergmann & Sams 2012) assuming the role of facilitator.

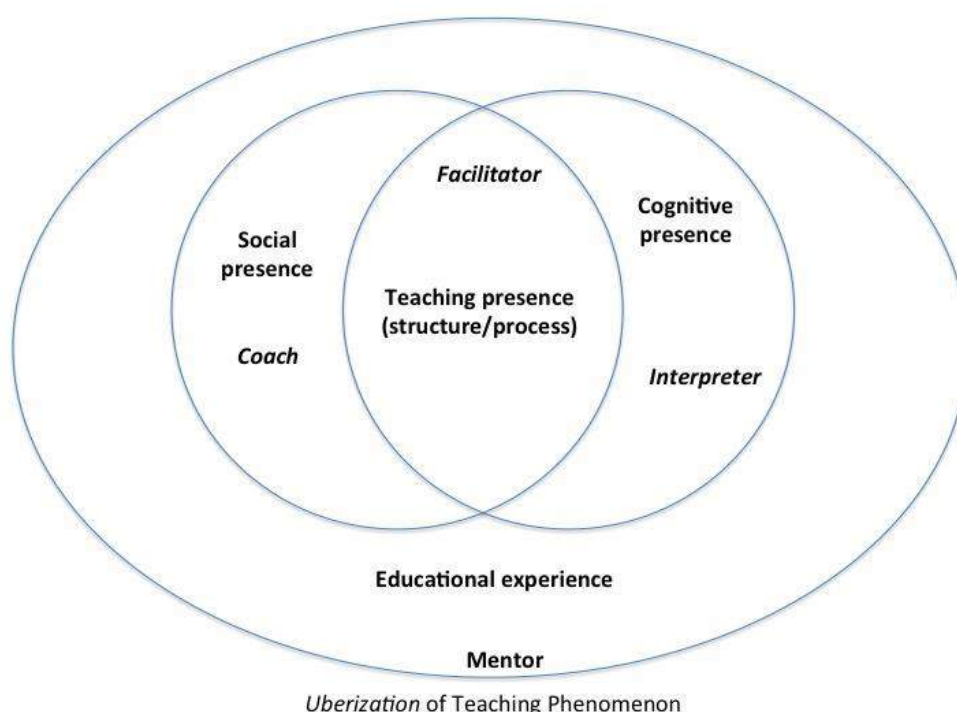


Figure 8

3 Conclusion

Experiencing MOOCs in a blended learning classroom can give us, therefore, a preliminary taste of the disintermediation force at work in the field of education. This is leading towards what can be defined as the «uberization of teaching» phenomenon. We see this phenomenon in the marketplace, where social media and mobile technology have enabled individuals to share their homes or their cars, for profit (Airbnb and Uber). The concept has been used by Gil Rogers in a interview on *The uberization of education* (3 June 2014), then reproduced by James L. Salmon in a post titled *Uberization of Education in the Built Environment* (10 Sept. 2015), uberization that «occurs when a specific student seeks out a specific teacher or group of teachers to learn a specialized skill or skill set. The Internet facilitates the connection of the student and the teacher while simultaneously enabling distance learning. The process harkens back to the apprenticeship model mastered by specialty trades and professions in centuries past» (Salmon 2015).

Thus, any individual with outstanding educational skills and communication abilities could provide, in the future, effective teaching based on a wide MOOC offer, without belonging formally to a recognized organization.

In a context where MOOCs is going to play a pivotal role in the academic education thanks to alternative pedagogies such as blended learning and flipped classroom, teaching not only will be characterized as a form of ubiquitous activity, variously disseminated into a learning ecosystem, but it will also be untangled from a specifically-designated institution and academic role. In other words, educating is going to become a highly personalised and flexible activity, regardless of how informal, or not, the learning is. Accordingly, academic institutions will probably change their social role, focusing more on defining those criteria and validation paths that allow learners to become part of the emerging epistemic societies.

To conclude, in accordance with what Clay Shirky (2015) has recently written about the dramatic adoption of online education, which is less about change in the content of classes and more about change to the institutional form of colleges, the result will be an organizational revolution where the teacher will see his/her role expanded and extended.

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Feasibility of creating a collaborative MOOC for Ireland: Opportunities and Challenges

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Abstract

This paper is part of a larger feasibility study that was conducted earlier this year around the creation of a (Massive Open Online Course) MOOC by the National University of Ireland. It locates MOOC development in an evolving typology of online learning and outlines a number of the key drivers behind their creation. A rationale as to why institutions might consider developing MOOCs is also presented before arguing that Irish institutions should engage in innovative collaboration to develop a MOOC or MOOCs. By so doing they can collectively showcase Irish universities on a global platform, avail of lower development costs and participate in the acquisition of new knowledge and skills. The paper recognises that such a project is challenging but suggests that Irish universities should be actively engaged in exploring the potential of an evolving world of online education, where MOOCs are currently a key component.

Keywords

MOOCs, National MOOC development,

1 Locating MOOCs in a Wider Context

In recent years, there has been a great deal of hype surrounding Massive Online Open Courses (MOOCs). This is particularly evident when we see the media - specifically print media delivering positive reports on the impact of MOOCs. Indeed, *The New York Times* hailed 2012 “the year of the MOOC”. Against this backdrop the National University of Ireland (NUI) commissioned a report on the feasibility of developing a collaborative MOOC by Irish higher education institutions. This paper captures some of the key reasons why such a MOOC or MOOCs should be developed and some of the challenges facing the NUI and Irish institutions to take the idea forward. The original feasibility report was produced by Venture Advancement and H2 Learning and was presented to the NUI in March 2015.

MOOCs are seen as a game changer in the education sector and are viewed as a means of ‘transforming’ the traditional model of higher education by using a range of digital technologies (Christensen, Johnson & Horn, 2008).

This opportunity to transform higher education and to reduce the cost of a university education has been at the forefront of discussion around MOOCs in the United States. Within this narrative, technology, and predominantly the internet, is seen as opening up access to online courses and offers new possibilities for learners around the globe to learn at a distance.

Though MOOCs are relatively new, they can be located in an emerging typology of online learning (Lowenthal, Wilson & Parish (2009), as depicted in Table 1. Table 1 shows that online learning is an evolving concept that consists of a wide variety of course designs and formats and goes well beyond a one-size-fits-all model of learning. By locating MOOCs in a wider context of online learning we

were keen to stress that there is no one-size-fits all in relation to learning at a distance and also that people have been learning at a distance since the 1890s (Wallace, 2003) via correspondence courses and that the Open University offered its first online course in 1988 (Mason, 2001). Though MOOCs are the new kid on the block, we need to carefully consider their potential impact on the education sector.

Table 4. An Initial Typology of Online Learning⁷

Formality	Formal (Credit)	Required Non-formal	Optional Non-formal	Informal	
Context	K-12	Higher Ed.	Corporate/Professional	Other	
Pacing	Traditional Semester	Accelerated Term	Self-Paced on	Completely Self-Paced	
Instructor Role	Highly active and present instructor		No Instructor		
Media	Primarily Audio and Video		Blended Media	Primarily Text-based	
Communication Technology	Primarily Synchronous		Blended	Primarily Asynchronous	
Cohort	Established Cohort / Group who knows each other	Brand new cohort	Non Cohort: The majority of students don't know each other	Non Cohort: Nobody has ever taken a course together	
Level Of Communication	Regular Communication with Faculty and Students	Communication (primarily) only with Students	Collaboration (primarily) only with Faculty	No (or very little) communication with Faculty or students	
Level Of Collaboration	Collaboration with Faculty and Students	Collaboration with Students	Collaboration only with Faculty	No Contact with Faculty	
% Online	Completely Online (no F2F meetings)	Predominantly Online	Blended	Adjunct / Supplemental	
Design & Development	Course was purchased by a vendor	Course was collaboratively designed and developed	Instructor is teaching a course designed and developed by another faculty	Instructor is teaching a course in which Web-based or other materials designed by others are incorporated into his/her own materials	Course is designed, developed, and taught by the instructor
Learning Objectives	Memorizing/knowledge/text processing		Authentic performing		
Subject Area	Soft Applied	Pure	Applied	Hard	
Teacher Background	Trained and Experienced Online Instructor	Experienced Online Instructor	First Time Teaching Online	n/a	
Student Homogeneity	Heterogeneous		Homogeneous		

In addition to locating MOOCs in the context of online learning they can also be located in the landscape of Open Educational Resources (OER). Some have referred to MOOCs as 'Big OER' where they are viewed as top-down resources in contrast to 'Little OER' which are more bottom-up.

Big OERs are institutionally generated ones that come through projects such as openlearn. Advantages = high reputation, good teaching quality, little reversioning required, easily located. Disadvantages = expensive, often not web native, reuse limited.

Little OERs are the individually produced, low cost resources that those of us who mess about with blogs like to produce. Advantages = cheap, web (2) native, easily remixed and reused. Disadvantages = lowish production quality, reputation can be more difficult to ascertain, more difficult to locate.

(Weller, 2009)

Much of the activity in relation to OER in Irish higher educational institutions has revolved around 'Little OER' and in the main these initiatives related to the establishment of the National Digital Learning Resources (NDLR) project. The NDLR project was established in 2004-05 by the Higher Education Authority (HEA) as a partnership between the seven universities and 14 institutes of technology in Ireland. The NDLR provided opportunities for collaboration and for the sharing and re-using of resources and it was generally viewed as a positive experience. However, the project

⁷ *An Initial Typology of Online Learning*: <http://www.slideshare.net/plowenthal/aect-2009-an-initial-typology-of-online-learning>

concluded in 2012 and a recent report noted that institutions still require models of support to assist institutions to use and re-use OER (Risquez et al, 2015).

Irish HE institutions have been more involved to date in the use and re-use of ‘Little OER’ as opposed to the development of MOOCs. This might be explained by the fact that the State support, provided by the HEA through the NDLR, focused on ‘Little OER’ as opposed to ‘Big OER’. There has been limited development of MOOCs in Ireland and where they have been developed, it has been on at an individual institutional level. There has been limited, or no collaboration between institutions on MOOC creation to date, and the NUI were keen to explore the prospect of Irish universities coming together to design collaborative MOOCs that showcased Irish academic excellence. They also recognised that there are many reasons why an institution or institutions might collaborate and these are outlined in the following section.

2 What are the drivers for developing a MOOC?

The next phase of the study explored why people are so interested in MOOCs and what are some of the key drivers behind MOOC popularity.

2.1 Cost

Some, such as Christensen et al. (2011), argue that the one of the reasons for the escalating costs in tertiary education is the inefficient business model of tertiary provision. He noted that universities typically bundle a range of services that include teaching, assessment, accreditation and student facilities as a package to all learners, whether they require them or not. MOOCs are opening up a discussion around the unbundling of such services and they are exploring whether universities can offer education, or elements of tertiary education, at a lower cost.

2.2 Technology Driven Innovation

Technology and in particular the internet has ‘transformed’ how other sectors design and deliver their services and now the question is can higher education achieve similar results. People use language such as ‘*technology-enhanced learning*’ to describe the potential impact technology can have in education, as it is seen that it can enable learners to access quality learning in new ways.

2.3 Labour Market Needs

There is evidence of growing youth employment globally (Mourshed et al., 2012) and some believe that HE institutions are not preparing young people for current job vacancies (Weise and Christensen 2014). MOOCs are viewed as a medium to provide ‘relevant’ job training courses to all citizens over the internet.

2.4 Learner Demand

“Demand for access to tertiary education is growing worldwide, with the projection that there will be 120 million learners by 2020” (Tertiary Education Commission, 2014; p. 22). MOOCs may be able to facilitate the growing numbers of people who want access to higher education. It appears that the growth in the number of learners signing up for “wholly online learning” is an indication that there is a real demand for such courses. It seems as if more and more people want to learn in their own time and the internet is allowing them the opportunity to access learning opportunities online, that previously were beyond their reach.

3 Potential Value for the Institution

The literature also shows that institutions see value in joining a MOOC network, such as FutureLearn or edX, and some of the main reasons for such decisions are as follows:

3.1 Branding

Institutions who typically join a MOOC network often view it as an opportunity to enhance their brand recognition and a way to join an exclusive professional network. Currently, many of the MOOC platforms, such as edX or Coursera, are viewed as exclusive clubs that have a set of entry criteria that not all institutions can meet.

Those institutions that do meet the entry criteria believe their participation will benefit their institution both in terms of raising brand profile in becoming members of a professional network (Cohan, 2012). Furthermore, there are opportunities for institutions to showcase their expertise in particular fields and to publicise some of their outstanding academic talent with a view to recruiting additional students at some point in the future.

3.2 Shared Services

The development of MOOCs offers institutions the possibility of *unbundling* four key elements of a typical higher education programme to their students and this can mean that students' enrolment costs are lowered (UK Universities, 2014). These elements are:

- Content
- Delivery Platform
- Feedback and Support
- Awards

There is interest among institutions as to how this *unbundling* might occur and if it can reduce costs, increase collaboration and ultimately enhance the quality of student learning.

3.3 Collaboration

The provision of a shared online infrastructure that is managed and maintained by a reputable institution has the potential to make it easier for institutions to create and manage collaborative delivery arrangements. For example, such a shared infrastructure could allow Irish institutions to come together and offer undergraduate courses or technical modules that are currently duplicated on all NUI campuses. Such an approach could "allow divisions of labour whereby institutions could contribute their teaching expertise, others their technical and so on" (Tertiary Education Commission, 2014; p. 26).

3.4 Explore online pedagogies

There is evidence that a significant number of HE institutions see MOOCs as providing an opportunity to experiment with innovative pedagogical approaches online (Allen & Seaman, 2014, 2015; Hollands & Tirthali, 2014b). The 2013 and 2014 Babson Survey Research reported that 49.8% and 44.0% of academic leaders viewed MOOCs as an opportunity to innovate pedagogy. However, in their most recent report (Allen & Seaman, 2015) this number dropped to 27.9%. Though this number appears to be decreasing a large number of HE institutions see the MOOC space as an opportunity to conduct research around new and innovative online pedagogies.

4. Implications for Irish Universities

A number of Irish higher education institutions were consulted in compiling my report and it is evident that there is considerable variance in relation to their use of online learning and their expectations in relation to MOOCs. However, all the institutions were interested in the potential value of being involved in developing a MOOC and in the adding value to their institutions.

Considering these discussions, there is clearly an opportunity in terms of innovative collaboration, where institutions come together to work together and develop new MOOCs that showcase their collective expertise. By identifying thematic areas of interest for MOOC development institutions can:

- Share costs
- Share knowledge, skills and learning
- Showcase domains where Ireland has international experience

The feasibility report also found that there is currently a variety of HEI perspectives on the potential of collaborative MOOC development.

These include:

- Varying levels of capacity and capability within institutions
- Some looking for large scale projects that look to attract learners outside of Ireland
- Others keen to take small collaborative steps
- Certain faculty/disciplines more interested than others

This raises the question of where might the NUI start in relation to developing a collaborative MOOC for Irish institutions? The good news is that a number of the major MOOC platforms are interested in hosting and showcasing collaborative MOOCs under the NUI banner. This is something that would be not possible if institutions were to develop stand alone MOOCs. However, it is worth considering if a presence on a major MOOC platform is sufficient reason to invest in developing a collaborative MOOC?

A number of institutions are already engaged in developing MOOCs in Ireland with notable institutions such as Trinity College Dublin⁸ and Dublin City University already engaged in developing MOOCs (Brown et al., 2015). Though the drivers for both institutions are different we have to ask why would they, or other universities, would come together under one umbrella to create a MOOC. One reason is the potential to offer quality learning experiences that go beyond a single institution. For example, if the NUI were to bring a group of leading educationalists together to design a MOOC for teacher educators in other parts of the world. By bringing a group of institutions together, there is a unique opportunity to bring different perspectives and expertise and to showcase Ireland on a global platform.

In addition, the design and development of a MOOC can be costly and not all institutions have the knowledge or skills in this area. By co-ordinating the MOOC design and development centrally academics can focus on creating engaging learning experiences for their learners without having the worry of having to deal with technical issues, such as production and marketing. Thus there needs to

⁸<http://www.educationinireland.com/en/News/Over-10-000-sign-up-for-Trinity-College-Dublin%E2%80%99s-first-MOOC.html>

be a team of people in place to ensure the MOOC is developed in a timely fashion and that it adheres to the highest quality possible.

The NUI is ideally situated to co-ordinate and negotiate collaboration between HES and to take this idea forward. By so doing, such consortia will be able to showcase the quality of Irish academics and provide valuable learning opportunities to a global audience. It would be a wonderful contribution to education if Irish academics had an opportunity to participate in developing 'Big OER' that allowed learners and other academics around the world to use and re-use their ideas and content for the greater good of humanity. It is in the interest of Irish institutions to support the dissemination of knowledge and ideas to the widest possible audience and MOOCs can help in bringing this about.

If HEIs do come together to develop a collaborative MOOC there will be a question as to what type of MOOC will they create? Will the MOOC be truly open and allow learners and other institutions to use it and re-use the content or will it be hosted on a closed platform. If they state support is provided for such collaboration then it could be argued that any such MOOCs should be truly open and distributed under a Creative Commons License.

5. Conclusion

Irish HE institutions have two choices in relation to the evolving world of MOOCs, they can participate actively or they can stand on the sidelines and observe. The NUI is exploring how interested institutions can come together to develop a collaborative MOOC. In so doing they will facilitate Irish universities to engage in innovative collaboration while also learning valuable practical lessons in relation to this evolving world of online education. Recent research carried out by the Teaching and Learning Forum (Risquez et al., 2015) appears to support the need to provide institutions with support in relation to developing 'Big OER' or MOOCs. In this way Irish HEIs can learn and contribute to the development of new flexible learning models that are supported by digital technology and they may also assist other educational institutions around the globe to flourish.

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The potential for using Moodle to deliver the content, facilitation, assessment and reporting of a MOOC

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Abstract

There have been a number of platforms used for hosting the different types of MOOCs, each of them with nuances in features and technical capability. Some MOOC platforms have been custom built for the purpose, and some are existing platforms, repurposed or adapted for use in MOOC delivery. To examine whether a system is suitable for hosting and delivering a MOOC, or being adapted to run a MOOC, we first have to look at a typical MOOC and what it involves from a functional and practical standpoint. Once we have deconstructed the typical MOOC, we then take a look at the system, in this case the Open Source Course Management System - Moodle, and deliberate on the broken down feature list and how these can be offered through the use of Moodle.

Keywords

MOOC, Moodle, open source, assessment, facilitation, communication, design

1 MOOCs

Although this paper focuses mostly on the delivery of the xMOOC (Siemens, 2012), a category of MOOC with a traditional learning approach conducted online with videos, quizzes, tests and knowledge duplication, most aspects are also applicable to the cMOOC, where the focus is on knowledge creation and generation. Moodle as a platform can be used, and has been used, to deliver both main types of MOOC. The Open2Study platform, which recently exceeded a million users, is based on Moodle and individual MOOCs hosted in Moodle are particularly prevalent in Europe (Foster, Cooch, Costello, 2014) with other examples elsewhere being:

- the Lean Sigma delivered by IT Sligo, Ireland (Donovan, J., Coll B. 2014)
- CCK08 and CCK09 (Siemens & Downes, 2008, 2009)
- HANDSON MOOC (Garreta-Domingo, Hernández-Leo, Mor, Sloe, 2015)

2 Structure

How a course is put together on any platform is a combination of pedagogical approach combined with selective use of the available features of that platform. This can provide for a range of delivery methods from a structured, paced course, such as a weekly delivery, or a course delivered more as a self-paced, personalised learning path. These features include a wide range of aspects including

- how users access the platform;
- the way content is added to the course and what type of content options are available;
- the level of interaction between the learners and other learners and between the course owner and facilitators with learners;
- the use of assessment, be it formative or summative;
- the type of engagement verification and tracking that is available both to the learner and the course owners;

- how certification and completion of a course is defined and organised; and finally
- the level of reporting that the platform offers to learners, facilitators and course owners on how the course is proceeding, how the learners are performing and engaging in the course materials activities and with each other.

This paper looks at these areas and how Moodle enables a MOOC course to be delivered.

3 Access

We can look at access to a MOOC course in a number of ways. First, how a user registers or creates an account on the platform is the entry point to the whole system. Moodle provides a number of out of the box authentication types including enabling a user to register with their email address (where the system will send a mail to the registering user to verify that they are indeed the owner of that email address). Alternatively, Moodle also allows the creation of users by a bulk upload of user data via a formatted text file of CSV (Comma separated values) or from a database, which means that the course registration can be operated on a different system such as Eventbrite and then the details shared with Moodle.

As Moodle is Open Source, there are also plugins contributed by the community that extend authentication features, enabling users to create their account with other sites including Google, Facebook, GitHub, LinkedIn and Windows Live. The first time a user logs in using this integration a new Moodle account is automatically created with the details from that account. There are other options too, but the mentioned approaches cover the most practical use cases.

4 Content

A typical MOOC course's content includes short videos with complementary materials in other modalities, such as transcriptions, a copy of slides used and other written content. Many courses will also include supplementary materials, such as kinesthetic presentations to allow hands-on interaction by students. How this content is presented to students will be dependent on the platform, but the richness of the content is dependent on the design of the instruction created by the teacher.

There are a number of things to consider when thinking about content, including how learners will access it. Learners consume the content of MOOCs in ways that are guided by personal and environmental factors (Veletsianos, G., Collier, A., & Schneider, E., 2015), which means that timing of their access, and intensity or length of effort, can be variable. Therefore, it is important to plan content delivery so that it is in a format that is accessible to users with disabilities, different languages and available on different devices (including mobile devices) and also built in chunks that facilitate 'dipping in and out'. The level of underlying accessibility of the platform includes having a content editor that enables course developers to build accessible content. Moodle provides the Atto editor, which was designed for developing accessible content.

Content format is also important. When adding lesson notes into a course, there are a number of ways this can be done - a Word document, a PDF, a webpage or other proprietary document formats. Moodle enables the course developer to deliver any of these options, leaving teaching decisions to the course developer rather than restricting how they want to operate.

The choice of format will also impact the ability of a learner to read content offline, if they choose to. Using an online video platform service like YouTube means that the user cannot easily download a video for offline viewing unless a downloadable file is also provided, contrasted with using a MP4

video file, which makes this possible. Moodle provides options for course developers when adding files to force download of media rather than embed it to help for offline use.

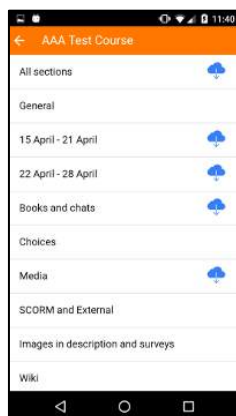


Figure 1. Moodle Mobile App showing download options per course section.

Moodle provides a Mobile App that enables the learner to download resources for offline learning by selectively downloading them, or choosing to download all. This means that the learner would not be forced to use their more costly mobile data plan when watching or reading the content on a bus or train, away from where they have Wi-Fi access. The ability to access content offline is important where Internet connectivity may be poor such as in remote regions and in the developing world. Platforms that have offline capabilities are important for opening up access to education. Most content resources in Moodle are available offline and more is being made available with each release.

Table 1: List of resources in Moodle online, in mobile app and in app offline

	Book	Page	IMS CP	Files	SCORM	Label
Web	Yes	Yes	Yes	Yes	Yes	Yes
Mobile	Yes	Yes	Yes	Yes	Feb 2016	Yes
Offline	Yes	Yes	Yes	Yes	Feb 2016	Yes

5 Facilitation and communication

Consider two modes of facilitation and communication in a course:

- helping learners that have run into technical difficulties or other problems with the course, and
- course related discussion and messaging.

Moodle enables the course facilitator to tackle both of these in a number of ways. There are four modes of forum usage available.

- A single simple discussion which is very useful for a short focused discussion, keeping the learners from creating other threads which can distract
- A standard forum for general use which provides an open forum where all can create a new forum thread or topic
- Q&A forum, where someone can pose a question and learners can then reply (although they will not see other replies until they have replied themselves)
- Each person posts one discussion, where each learner can initiate just one discussion topic each but they can reply to any of them.

Blagojevic & Milošević found that forums are meaningfully developed with Moodle because they provide more types of discussions (Blagojevic, M., & Milošević, D. 2015).

Focused comment threads are also possible. The course developer can enable commenting on any resource or activity in the course through use of the comment block. This means that learners can provide commentary and feedback directly beside the learning resource. In addition, course developers can allow learners to comment on learner-created content in database or glossary, if these are used to provide a richer learner feedback experience.

Course developers must be able to make use of forms of teaching and assessment that are suitable for high student numbers (Ferguson, R., et al. 2014), so choosing the correct type of facilitation is crucial.

6 Assessment

Online assessment can be delivered by both an automated and manual approach. This two pronged approach includes automated correction of online quizzes and manually graded assignments, usually graded by the learners under a peer-to-peer assessment method where learners grade against a given rubric.

Online quizzes are activities where the learner answers a selection of MCQ (Multi-choice questions), or other question types, under a set of constraints including time allowed, number of attempts allowed and how multiple attempts impact grading. These are typically implemented as part of the formative assessment strategy throughout a short course. Moodle provides a quiz engine that can also deliver high-stakes, exam-like summative testing. It has 17 different question types available including the standard True/False and Multiple choice and there are over 50 other question types available from the community. Images, videos and audio can be used in questions, answers and feedback to provide a richer experience and a more authentic assessment.



Figure 2. Interactive question type where the user drags labels onto a graphic.

Peer assessment can be delivered in Moodle in a number of ways, but the most comprehensive way is using the Workshop tool. This is a phase-based assessment where learners are required to create an assignment and submit it, and afterwards, the learners will assess a number of other learners' submissions. The learners can get grades for both their own submission and the consistency of their reviewing compared to the others who reviewed the same assignment. This can provide a balance that encourages learners to place greater consideration on how they review their peers' works. Reviewing can be managed with a simple checklist of criteria or a more complex rubric as required.

Providing learners with high quality, expert human feedback to promote learning is one of the ten-principles framework used in evaluation of instructional design quality (Margaryan, 2008; Margaryan & Collis, 2005). As MOOCs generally do not have instructor feedback (Margaryan, Bianco, Littlejohn, 2014), a well-developed rubric for peer review and feedback is needed to aid the learners and channel feedback.

7 Empowerment and engagement

Engagement can cover so much within a learning system, so for this topic we will stick to two aspects: supporting the learner knowing their progress and their learning success.

It is important to support the learner throughout the course, scaffolding their progress to help them know what they have completed, what they have yet to do, what is next and what is important. Self-regulation and self-paced aspects in a MOOC promote student empowerment and engagement (Lourdes, G., Maina, M, & Sangra, A., 2009).

Criteria group	Criteria	Requirement	Status	Complete	Completion date
Activities completed	Lesson Activity Course Completion 1	Achieving grade		Yes	
(any required)	Quiz 1	Achieving grade		Yes	
Manual completion by	Teacher	Marked complete by Teacher		Yes	

Figure 3. Learner view of the course completion requirements

Moodle provides a range of options to aid the learner in these ways. Each resource or activity can be tracked as incomplete or complete by either an automated check based on activity (has the learner viewed this resource or has the learner received a grade on this quiz) or a manual check, where the learner themselves decide they have finished with a particular activity. A visual tick-box for completed items is provided so that the learner knows what has been completed and what has not been completed yet. Course facilitators can also view reports on learners and their activity completions. This tracking is optional and can be set on all items or selective items that are deemed key to be tracked.

A course developer can define what the key completion criteria for a course are, such as completing the key assessments and attaining a grade of at least 70%. This course completion information can be provided to the learner so they can see what the most important aspect of the course materials are and what they have completed so far.

Criteria group	Prerequisites	Activities	Grade	Approval	Course
Aggregation method	Any	Any	-	Any	All
Criteria	Course Completion 01	Lesson Activity Course ... Quiz in Course completion 02	70% required	Teacher	Course complete
First name / Surname				Teacher	
Test User1	✓	✓	✓	✓	
Test User2	✓	✓	✓	✓	
Test User3	✓	✓	✓	✓	
Test User4		✓		✓	

Figure 4. Course completion report including activities and grade requirements.

Activity completion can be used to provide a personalised learner pathway through the course materials, by restricting access to subsequent content or activities until a specific one is complete. An example of this would be locking week 2 content until week 1 assessment was complete. This can help the learner's progress through the content in the desired structure and order, if this is important. Activity completion can also be used to direct students to supplementary content and assessment if they have failed to achieve a certain level in previous activities. In this way, repetition and reinforcement can be encouraged automatically. Advanced students can be offered additional challenges if they have achieved a certain level of completion.

There are a number of Moodle plugins that can take these concepts of progression and success further providing visual and a more gamified aspect including the popular Progress Bar that provides a visual representation of the activity completion.

Understanding performance can provide more contexts for the learner in their journey. In times gone by, institutions would post student results on noticeboards for exams whereas now, online, the gradebook information is usually warehoused and hidden away from students and learners so that they can only see their own information. It is possible to selectively show a leaderboard for graded activities, either with names or anonymously, so that the learners can compare their grade against the top / bottom scores to understand their relative performance among their peers.

There is also a gamification plugin that can provide a leaderboard on more aspects of engagement than just grades, including points and levels for accessing content, and interacting on forums.

8 Certification

Currently there is a selection of ways that MOOCs provide recognition for having taken part in the course. Some provide Certificates of Completion, some provide Open Badges and some sell certificates to those who complete and wish to have recognition for this. However, legally incontestable identification of individuals is going to be a necessary step so that credit points can be awarded towards (Beiträge zur Hochschulpolitik, 2014).



Figure 5. Example of Badges issued for contribution in Moodle community site

Moodle provides the choice of providing Open Badges and Certificates, one or both depending on how a course is configured. The Open Badges can be set up to be automatically awarded, either by full course completion or by specific activity completion. Open Badges can also be awarded manually by the course facilitator. Moodle Open Badges can be used for both the aspects of certification rewarding attendance at the course and recognition of the quality of the participation (Beiträge zur Hochschulpolitik, 2014).

Certificates appear as activities in Moodle and allow for the dynamic generation of PDF certificates based on predefined conditions set by the teacher, including grade, course or activity completion.

9 Reporting and Analytics

Whether you are a learner, facilitator or course owner, your role will help decide what type of report you want to see on a course. Learners look to see where they are, what they have done, what grade they have received and what feedback they were given. Facilitators need to see what the learners have done or not done, what a particular learner has done or not done and also what needs attention in the course, such as new forum posts. Course owners need to see these and more, including levels of participation in course activities, navigation paths through the course and also feedback.

Moodle provides a wide range of reporting options that can be used to meet different needs.

The Quiz statistics report is a valuable tool in analysing both the quiz results and the validity of the questions used in the online quizzes.

Quiz information	
Download full report as a comma separated values text file	
Quiz name	Water Tester Quiz
Course name	Water!
Number of complete graded first attempts	23
Total number of complete graded attempts	31
Average grade of first attempts	50.43%
Average grade of all attempts	55.48%
Median grade (for first attempts)	40.00%
Standard deviation (for first attempts)	15.81%
Score distribution skewness (for first attempts)	0.5274
Score distribution kurtosis (for first attempts)	-0.2490
Coefficient of internal consistency (for first attempts)	12.66%
Error ratio (for first attempts)	93.46%
Standard error (for first attempts)	14.77%

Figure 6. Example quiz analysis report in Moodle

The Quiz report provide analysis of the grades, average scores, standard deviations as shown in the above image. This provides the facilitator and course developers valuable information in determining the appropriate balance in the quiz against the content and learning activities provided in the course.

Quiz structure analysis										
Download table data as a comma separated values text file										
Q#		Question name	Attempts	Facility index	Standard deviation	Random guess score	Intended weight	Effective weight	Discrimination index	Discriminative efficiency
1		El Nino	23	43.48%	50.69%	25.00%	20.00%	34.44%	1.96%	3.16%
2		Match the river	23	95.65%	20.85%	33.33%	20.00%	17.67%	16.93%	100.00%
3		What type of water?	23	21.74%	42.17%	0.00%	20.00%	33.26%	28.51%	42.50%
4		Every 20 seconds !!!	23	91.30%	28.81%	50.00%	20.00%	14.63%	-15.77%	-35.29%
5		Rich and poor	23	0.00%	0.00%	0.00%	20.00%	0.00%		

Figure 7. Example question analysis report in Moodle

The Quiz structure analysis takes the detail to the question level so that bad or low quality questions can be identified for remedial effort or removal from future quizzes.

The Activity report provides a course level overview, showing involvement in each activity and resource. This can be viewed by course owners, developers and facilitators. A learner can be allowed to see their own report of contributions including forum posts and assignment submissions.

The Participation report enables the facilitator to generate a report on a particular activity for a set number of days and they can choose to filter based on different types of actions, such as views or posts (where posts in the context of a forum includes adding discussions, adding posts, deleting posts, moving discussions or updating a post). This report lists each learner and shows the count of the actions on that activity. It also provides a way for the facilitator to select some learners (such as those with few or no actions recorded) and send them a message, helping in the facilitation process. This can help the facilitator intervene at a suitable point in the funnel of participation (Clow, Doug, 2013) as activity is seen to drop off, to attempt to re-engage those learners.

The Statistics report in a Moodle course provides a visual overview of activity over a period of time, with a graph of learner and teacher total activity. This can be used as a general tracking tool for identifying the steep decline in participation that MOOCs suffer.

It is also possible to export out all the Moodle log entries for that into a spreadsheet for offline analysis, using techniques similar to those in the analysis of a clickstream.

10 Conclusion

This paper outlined many of the features required for successful MOOCs that can be realised using Moodle.

Using a robust, scalable, mature open source platform like Moodle for MOOCs provides the course developers and facilitators a range of core features, and community tools that go beyond what is possible with a specific software designed for just for the purpose of one type of MOOC. Moodle provides a flexible platform suitable for realising a range of different pedagogies along the cMOOC-xMOOC spectrum. Many institutions have in-house expertise and experience in using Moodle and institutions can choose to host or contract Moodle partners (Moodle, 2015) so they are not tied to a single provider.

One of the main claimed drivers for institutions to offer MOOCs has been as a tool to help drive innovation (Jansen & Schuwer, 2015). For example to in allowing them to help transition to more flexible modes of education, improve teaching both on-campus and off, open access to education. A platform that is used both for the main educational provision of an institution and its MOOC offerings has the potential to allow more seamless adoption of pedagogical innovations from one to the other.

Lastly as open source software Moodle has the potential for true open innovation (Chesbrough, 2003). This can allow institutions to meaningfully and powerfully engage in open educational practices with the ultimate objective of improving access and outcomes for learners.

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Introducing MeMOOC and Recent Results in e-Learning at University of Miskolc

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Abstract

MeMOOC stands for Miskolci Egyetem (University of Miskolc) and Massive Open Online Courses. The MeMOOC social learning portal has been developed at the University of Miskolc, Hungary. The targeted audience includes students who fall behind their learning schedule, students who can not afford conventional higher education. Also, students who are interested in computer science but do not know where to start are welcome. The Open edX based MeMOOC has an extensive grader tool that helps students testing their code without intervention from a teacher, thus providing a flexible learning experience. MeMOOC has 12 flagship modules which provide course material on Information and Communication Technologies (ICT), computers, servers, programming and multimedia development. The courses are available in Hungarian and in English.

Keywords

MOOC, Open edX, ICT, programming, informatics, social learning

1 Introduction

Twenty years ago the recognition of an urgent need for a paradigm shift in higher education, values of flexibility and openness, as well as new possibilities offered by multimedia and networking tools induced several international programmes and projects. University of Miskolc entered this scenario at that time, due to the PHARE Multi-country Cooperation in Distance Education Programme, establishing and supporting a network of Open Distance Learning study centers in the Central East European countries. Strategic partnership with EADTU can be demonstrated by 13 successful projects within the past two decades. Beyond the PHARE, Tempus, Leonardo, Socrates Minerva, Erasmus as well as some national programs offered excellent possibilities for joint activities for educational innovation, leading to some unique, advanced solutions in open, flexible learning, e-learning (<http://edu.uni-miskolc.hu>). Although ten years ago no one called them MOOCs, one of our EU supported, Minerva project – e-Taster, (http://www.emrtk.uni-miskolc.hu/projektek/e_taster) – developed 12 non-accredited, short, self-standing "taster" courses to be offered on-line, free of charge for general public (Kocsis-Baán, 2007). Results of the e-Taster project, the multilingual bite-sized, open learning programs, which may be considered as nano-MOOCs, are no more available in the original framework, however some of them were redesigned and improved for the Moodle system. University of Miskolc participated also in a wide range of „employability”-projects (van Dorp et al., 2010), (van Dorp et al., 2011) led by the EADTU (CSVM, CBVE, CBVI) and collaborated with several EADTU members in different further projects: International Internship AGORA was the latest - but hopefully not the last - joint project.

2 MeMOOC system overview

The Open edX system, on which MeMOOC is based, is a decisive actor of the on-line learning segment (Pritchard D. E. et. al. 2013). It was created by a cooperation between Harvard and MIT. It has been grown up, and today the leading universities of the Anglo-Saxon world – along with some other universities – all offer edX courses in it. It is also supported by IT-giants like Google or Microsoft.

The Open edX based courses are very extensive: you can find materials on biology, economics, chemistry, computer science, engineering, history, law, literature, mathematics, health and medical sciences, music, philosophy, physics, etc.

2013 was a breaking point for edX, as this was the year when the open-sourced version called Open edX had been released. This opened the opportunity for any university to join the edX platform for free by creating their own learning centers.

The training materials for edX courses are divided into weekly sections. A typical course usually has contents up to 10-12 weeks.

Unfortunately on-line courses and learning environments have high dropout rate: it is considered a successful course if 50% of the enrolled students finish it (Onah, Daniel F. O., et al. 2014). To lessen the dropout rates, edX invented its own approach.

On one hand, it splits the learning materials to small, easily to understand and processable units, which are usually 12-20 minutes long. At the same time, instead of dry readings, besides the textual content it utilizes videos, on-line tests, exercises and games. Short videos and exercises follow each other, so that the students have to practice what they have learnt.

On the other hand, the Open edX environment is not a learning environment for individuals only. It gives you the social learning experience by using forums, wiki pages and discussions. Students are encouraged to ask questions on forums, which contribute to the social aspect of the system. Those who are good at helping others can become mentors. Their activity is not only to give guidance with the training materials, but they can provide tips and tricks to become a successful online learner.

MeMOOC has all the features mentioned above. We are very proud of our addition, the advanced grader tool, that analyses the code written by the students and evaluates the code. In this way, students get instant feedback on the code they have written without the constant presence of a teacher.

3 Graders

How do we test students' code? When students are asked to write a short program code according to a very detailed specification their codes are checked line by line. Their codes are compared with the expected solutions line by line. If all the lines of the code are perfectly identical with our solution code the program is correct. Here is a short example:

“Declare a byte variable in the second line of your code called `s` right after instantiating `Scanner` class in the first line with name: `keyboard`. In the third line read in a byte from the standard input and store it in variable `s`.”

For testing this code “Custom JavaScript Display and Grading” problem type is used in MeMOOC. Here is the code that tests the students' solution:

```

1 <problem>
2 Declare a byte variable in the second line of your code called s right after instantiating Scanner class in the first
  line with name: keyboard. In the third line read in a byte from the standard input and store it in variable s.
3 <script type="loncapa/python">
4 def vglcfn(e, ans):
5     return ans.replace(" ", "") == "Scannerkeyboard=newScanner(System.in);bytes;s=keyboard.nextByte();"
6 </script>
7 <customresponse cfn="vglcfn"><jsinput gradefn="getGrade" width="900" height="200" html_file="/static/textarea.html"
  /></customresponse>
8 </problem>
9

```

Figure 9. Simple grader for testing line by line

It is also possible to test students' code by using unit test. This requires JDK 7 and JUnit4 to be installed on the server. Simple methods and full programs can be graded in our different courses. Using `assertEquals` method of JUnit the response of the student code is compared with the expected result.

The third way of testing and grading students' code is using Mockito. When testing a code in which swingx components used the point is to be able the check whether the students instantiated for example three `Checkbox` objects and called `addItemListener` method three times. To be able to complete this grader Mockito and Powermock-module-junit are being run in the server side. In the test program the existence of the class is checked in the following way: we try to refer to the object and if it does not exist in a catch block we catch the error.

4 Languages

Ten years ago in our first project – eTaster - a special feature of these courses was an innovative solution for multilingual delivery - 4 of the 12 courses were available in 10 languages. Our partnership focused on overcoming the language barriers by developing a user-friendly, permanent language support, instead of offering the same content in different, but separate language versions. Navigation languages available in our special e-learning platform (named COEDU) were the followings: EN, HU, SK, PL, RO, BG, LT and RU. The other level of multilingual delivery relates to content elements, which may be displayed in the following languages: EN, HU, RO, LT, BG, PL, D, F, IT, ES, SK and RU. Learners may switch between the language versions within the courses, paragraph-by-paragraph, while system administrator may define the order of languages: any of them can be selected as “master”, while others are hidden and displayed in pop-up windows, when clicking on their flag symbol.

MeMOOC courses development focused only on two languages: English and Hungarian. The targeted audience includes Hungarian and international students who come from different countries and speak English fluently. Therefore, two languages are enough for all the students who want to learn Computer Science subjects.

5 Conclusions

Recent surveys on the labour market demands of Hungary have shown serious deficit in the number of positions offered by the IT sector and different branches of the economy with urgent need for highly skilled informatics and graduates in this specialization. Although all comparisons of average earnings of young graduates show that the highest earnings are gained by career beginners who graduated from informatics, engineering, defence and military studies, economics and business, only few students select the IT professional field, and high drop-out rate of students causes further decrease.

The MeMOOC project was realized by two Higher Education Institutes of the North-Hungarian region – University of Miskolc and Eszterházy Károly University of Applied Science –, responding to this labour market demand and establishing an on-line training centre which may contribute to an increase in the number of IT graduates of the region. MeMOOC Centre offers not only free access to wide variety of IT course content in Hungarian and in English, but also an effective mentoring system to support disabled students and to decrease drop-out rates as well. All the twelve modules were developed in two versions: advanced modules lead to credits acknowledged at the University of Miskolc, in blended format, while simplified modules can be completed in distance learning program for anyone, but without credits.

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KMOOC for Knowledge Sharing of ODL

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Abstract

As the development of MOOC as a flexible means of widening access to education in various regions including Asia and Europe and at various levels is well documented. Over the past years, tremendous growth and diversity in ODL and a wide spread of e-learning have been observed in the Asia-Europe countries. The advancement of OER and MOOC are the educational buzzword in 2012. This paper focus particularly on the Korean MOOCs platform which is good fit to the Korean higher educational circumstances.

This paper brings together the quality, completion rates, certification, pedagogy and purpose of KMOOC with several universities and the institutions under Ministry of Education. In detail we survey the available resources which were produces by universities and institute KERIS and NILE and analyze those view point. Also we suggest an idea for the official funds support from government for KMOOC Platform and LMS, CMS system and the credit exchange accreditation system supported by the Ministry of Education.

There are 18,000 units around courses were opened to the public at the OER system but we need the integrated system archive to manage and share those courses for KMOOC to save the cost and standardize the quality of higher education contents for the better teaching and learning.

We would like to organize KMOOC courses which are not gathering but rather a way of connecting distributed instructors and learners across a higher education courses using KMOOC network and national institute KERIS, NILE connection too.

Keywords

OER, KMOOC, Quality Assurance

1 Background

Since the opening of a school in 1972, Korea National Open University has been growing as the only one open and distance learning mega-university in Korea with a considerable scale for the past 30 years. KNOU has 4 colleges, 23 departments, and approximately 179,726 students and it has turned out 290,000 graduates so far. It also opened an online graduate school based on e-learning start with 4 departments and now 17 departments with 1402 graduate students. ODL institutions have been using a variety of technology tools to serve their learners studying in diverse learning contexts, and recently many of them have been adopting digital technologies such as the Internet and multimedia resources and embraced e-learning, virtual programs or online courses in their education. With the expanded availability of new digital technologies, these institutions have also created and embedded various forms of digital resources including MOOCs in their courses.

This paper will look into the preparation made by KNOU to implement the MOOC, and examine the MOOC programs at KNOU from a knowledge-sharing perspective in lifelong education. KNOU has duly noted the wide spread of OER both at home and abroad, which first began at MIT to share digital educational and lecture contents. Keeping abreast of such trend, KNOU that has at the forefront of providing life-long education to everyone, is working to formulate MOOCs tailored to the Korean context.

2 Current Status of MOOC in Korea

KNOU is Korea's largest distance-learning institution with various OER contents, boasting a 40-year history of providing educational services that are tantamount to today's MOOC. However, these services have been provided within the conventional realm of distance education. Therefore with regard to introducing a MOOC platform, KNOU needs to make a new effort. In this context, KNOU has been paying close attention to the MOOC movement, which started to spread since 2012, and also trying to utilize it.

As for the barriers to MOOC adoption, again lack of awareness, lack of appropriate competencies and lack of support from management were indicated as most serious barriers to MOOC use. Kim (2016)¹³ also pointed out that two most important challenges for MOOC development are resolving copyright issues and assuring the quality of MOOC produced by university educators.

3 Remark: Future direction of KMOOC development

As the Korean government is increasingly aware of such trend, the ministry of education announced the basic plan for MOOC in 2014. It has scheduled to establish a MOOC platform in 2015, start offering MOOCs in 2016 and make partnership with overseas MOOC platforms in 2017. National Institute for Lifelong Education is tasked with implementing the basic plan. In this paper, a few suggestions and words of cautions are made to the aforementioned basic plan for better implementation.

First, for the better development of KMOOC, a network should be built, as shown in Figure 1, with Asian and global MOOC providers.

Second, in order to make an efficient educational service, there needs to be a thorough review of KMOOC contents in areas such as the scope and the target of service, operators, funding, accreditation or certification, faculty support, content development, learning platforms and student fees.

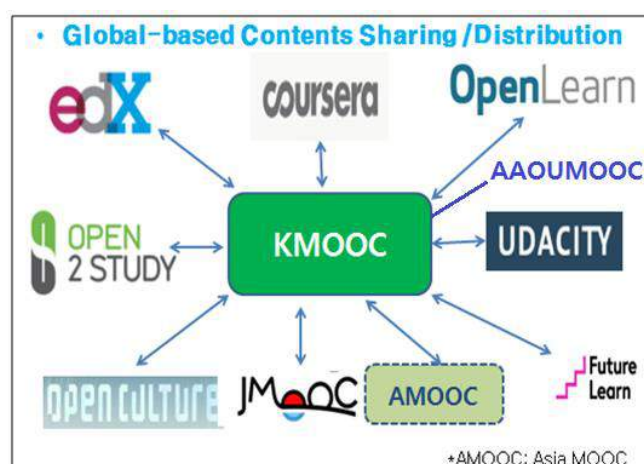


Fig.1 KNOU Global MOOC

Third, in order to make KMOOC an active MOOC platform, regulations on online credit courses offered by traditional universities should be lifted while the understanding of open online courses should be improved. At the same time, there is a need for an in-depth discussion on the financial restriction of universities in Korea with regard to the pressure to lower tuitions and additional costs incurred by the establishment of physical and human infrastructure to buttress the MOOC platform. Lastly but not the least, KNOU should go beyond providing its existing quality OERs one-sidedly but expand it to include KMOOC so it can be more interactive and mutually reinforcing. Ultimately, it

should play an important role in creating AMOOC (Asia MOOC) and then connecting it with other global MOOC providers.

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The implementation of MeaeX the Greek MOOC platform from Hellenic Open University

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Abstract

Massive Open Online Courses (MOOCs) constitute the latest trend in education, providing new opportunities for open and distance education. The objective of this paper is to describe the use of MOOCs by the Hellenic Open University. Particularly, a description of HOU main drivers for developing MOOCs are presented, followed by the selection procedure for the appropriate MOOC platform. Furthermore, “meaeX”, the Greek MOOC platform, is presented along with a description of the first MOOCs offered by HOU. Finally, the paper concludes by presenting HOU future goals regarding MOOCs.

Keywords

MOOCs, Hellenic Open University, meaeX, Greek MOOC Platform

1 The need for MOOCs in Hellenic Open University

The term Massive Open Online Course (MOOC) was coined in 2008 by George Siemens and Stephen Downes after conducting online course CCK08 (Fini, 2009), successor to a series of previously successful Open Online Courses (Fini et al., 2008). Hellenic Open University (HOU) adopts the definition of a MOOC which the HOME project and OpenupEd proposed and it is shared by many European partners: “*MOOCs are online courses designed for large numbers of participants that can be accessed by anyone anywhere as long as they have an internet connection, are open to everyone without entry qualifications, and offer a full/complete course experience online for free*” (Jansen & Schuwer, 2015).

HOU is the sole Greek State University that provides distance education in both undergraduate and postgraduate levels. HOU develops and implements appropriate learning material and methods of teaching for distance education. Nowadays the registered students of the institution are 36,041, while 27,770 students had graduated from HOU.

Internal Assessment and Training Unit (IATU) is an independent unit of the HOU, whose main objective is to support the continuous improvement of HOU education. IATU's activities also include the assessment of the educational process of the HOU, the external evaluation, organising and coordinating tutors' training and conducting research on eLearning & contemporary evaluation methods.

HOU student's age for the academic year 2013-2014 was 39.2 years old on average (SD= 7.5 years) and most of them are employed, having limited time to devote to their studies. Because of the long time that has passed from their previous education, HOU aims to take advantage of MOOCs by developing and providing introductory courses to the Course Modules offered by the institution, that cover a specific subject on an undergraduate level, in order to bridge the gap between secondary education and higher education.

In addition, HOU, through IATU conducts yearly training courses for the new members of the tutors community. In these courses, the new educators are introduced on both technical and pedagogical practices used in HOU. To this end, a hierarchical educational model is followed: Few experienced educators train a small number of tutors, who in turn educate all the new tutors. This continuous education of the teaching staff helps towards upgrading the quality of education in the HOU. The HOU offers its courses by employing 1,730 tutors today, while over 10,000 applied for these positions, therefore MOOCs create the opportunity for a very large number of people to have access to quality learning modules with low cost development and support compared to traditional and in-person training.

For the aforementioned reasons, the IATU, aiming at the continuous improvement of the educational functions of the HOU and guided by the requirements for an enhanced level of service quality, invested in the development of MOOCs.

2 A comparative evaluation between different MOOC platforms

In order to determine how HOU could develop its own MOOCs, a comparative evaluation between different MOOC platforms was conducted. The initial requirements set by IATU included based MOOC features (such as open access, freedom of pace, etc.), but also the use of open source code and therefore analysing the results (Fig. 1), it is observed that although all platforms provide open courses promoting free access, the significant issue of open source is only provided by edX and Khan Academy platforms.

Case	Coursera	Khan Academy	Udemy	edX	FutureLearn	Udacity
Open access	✓	✓	✓	✓	✓	✓
Free access	✓	✓	✓	✓	✓	✓
Freedom of pace	✓	✓	✓	✓	✓	✓
Freedom of space	✓	✓	✓	✓	✓	✓
Freedom of start	✓	✓	✓	✓	✗	✓
Open source	✗	✓	✗	✓	✗	✗

Figure 1: Comparing MOOC Platforms features

After the investigation, the edX platform seemed to be more suitable for a HEI with the principles of HOU. Selecting the edX platform, HOU can (a) promote the use and development of open source educational systems through a framework of open and free access, (b) save a significant amount of its resources, as HOU will develop its own MOOC platform, (c) manage on its own the issues of maintenance and updating of the developed courses (Sideris, Tsironis, Xenos, 2015).

3 meaeX: the Greek MOOC Platform

Based on the initial study as presented in the previous section, the IATU with the collaboration of the members of the Software Quality Research Group (SQRG, <http://quality.eap.gr>) developed the Greek MOOC Platform named **meaeX** (Fig. 2) which is based on Open edX, the open source platform that powers edX courses (<https://open.edx.org>).

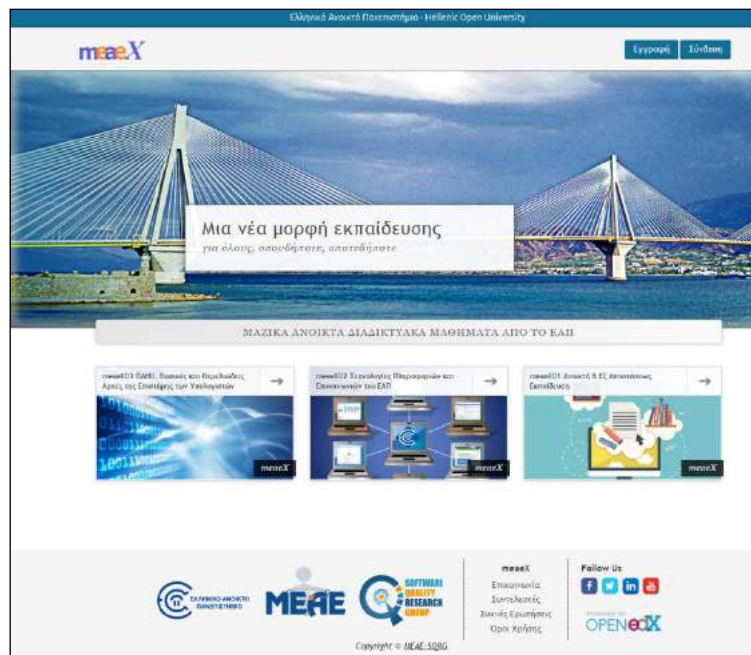


Figure 2: The home page of meaeX

The meaeX platform currently has 3 courses developed by the IATU team and its collaborators, the *meaeX01: Open & Distance Education* course, the *meaeX02: Information and Communication Technologies of HOU* course and the *meaeX03: Foundations and Basic Principles of Computer Science* course. A short description of each one is presented hereinafter.

3.1 meaeX01: Open & Distance Education course

Applying techniques for distance education is a challenge for any teacher who is first involved in such a process. Through this course one will know the specifics of adult learners and the principles of adult education, will see the dimensions of openness and distance education, will become familiar with the basic techniques of conducting group counseling meeting and evaluation of a written work, in general. The course duration is 8 weeks with an average workload of 2-5 hours/week.

3.2 meaeX02: Information and Communication Technologies of HOU course

The HOU, as an institution that provides education entirely remotely, invests in using new technological methods and tools. Towards this end, the use of information and communication technologies is important for the continuous optimisation of the provided instruction. This course analyses the key information systems and e-services of the HOU. The objective is to provide know-how for the use of the HOU learning technologies and to enlarge the knowledge horizon of the teachers and all potential stakeholders with information sources. The course duration is 5 weeks with an average workload of 7-10 hours/week.

3.3 meaeX03: Foundations and Basic Principles of Computer Science course

The purpose of the course is to describe the modern world of computers and is intended primarily for those interested parties wishing to acquire a general knowledge related to information management and the use of computer applications. The course duration is 6 weeks with an average workload of 2-3 hours/week.

4 Conclusion

MOOCs may become a powerful tool for a variety of class styles. HOU pioneers new educational methods which are based on the principles of distance education. As a result, it is considering

MOOCs as part of its policy and invests in the development of high quality MOOCs for training academic staff and for bridging the gap between secondary and higher education for its students. HOU commitment with MOOC will be enhanced in the following years with more MOOCs offered using meaeX, as well as deploying new techniques and methods in the fields of offering open education and assessing the quality of the MOOC users' experience.

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MOOCs, OER, Moodle - scaling tests of Moodle software

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Abstract

The Authors' aim is to answer the question whether Moodle software could be used for MOOC platforms and what are the hardware requirements in the context of scaling. The paper presents Moodle platform test results carried out for cases with different server configurations.

Keywords

MOOC, Moodle, Apache, Nginx, hardware, OER

1 Introduction

This article aims to answer the question of whether it is possible that a university, with a mediocre server resources and experience with Open Educational Resources (OER) platforms, could add to their educational offer Massive Online Open Courses (MOOCs) without incurring additional costs associated with the maintenance of additional kinds of software and upgrading the server.

For a medium-sized university it is sometimes convenient to run its own MOOC platform. Assuming that such a university already has an e-learning platform (Moodle, Blackboard and the like) in use, do we need to search for a more efficient software (e.g. EdX)? The test of scaling was carried out on Moodle, popular software for OER, and e-learning courses.

2 Material and methods

Users' activities on MOOC platforms are confined largely to reading the content, solving quizzes and watching multimedia recordings. In order to simulate the first two activities our tests consisted of:

Test 1: logging in, browsing different parts of a text and graphics, logout

Test 2: login, solving a simple quiz, logout.

Next, we simulated simultaneous work with

Test 1 done by 100, 200, 300, 400, 500 and 600 concurrent users (the total number of people using the resource within a predefined period of time). During tests, the server behavior was monitored.

For comparison, tests conducted on two virtual machines with different configuration.

2.1 Configuration Moodle tested resources

Test 1 - pages configuration:

4 pages - lorem ipsum text with 3 000 characters

4 pages - lorem ipsum text with 30 000 characters

1 page - jpg picture size 900 KB

1 page - jpg picture size 90 KB

Test 2 - quiz configuration:

10 one choice questions

one question one page

submit once at end (no submission after each question)

no timer, no other special settings sessions without set time limits.

2.2 Architecture and server software

The cluster architecture includes two Dell PowerEdge R815 and one Dell PowerEdge R620. Disk array

- Dell PowerVault MD3220i (6x SAS 600 GB 10k hard disk).

Virtual Machine I (WM I)

Hardware

8x 2.2 GHz CPU

memory 8GB RAM

the same virtual machine for database

Software

Linux: CentOS 4

Apache 2.0

PHP 5.4

MySQL 5.0

Virtual Machine II (WM II)

Hardware

8x 2.2 GHz CPU

memory 4GB RAM

the same virtual machine for database

Software

Linux: CentOS 4

Nginx 1.6.2

PHP 5.4

PostgreSQL 8.4

2.3 Software used for testing

The Grinder 3

a framework for running test scripts across a number of machines (<http://grinder.sourceforge.net>).

Check_MK

software for server process monitoring (http://mathias-kettner.com/check_mk.html).

3 Results

Two tests were performed on WM I and WM II.

During the tests the mean time taken to execute the test and receive the full response from the target application (Mean time on test) and the average number of iterations of the test that successfully ran in a one second interval (TPS) were measured.

3.1 Test 1 - viewing pages

In this case, authors tested the demand on resources while browsing through a Moodle resource called "Page" by users.

The average time to complete a task is shorter for the WM II.

The difference can be seen especially at higher server load which reflects Figure 1.

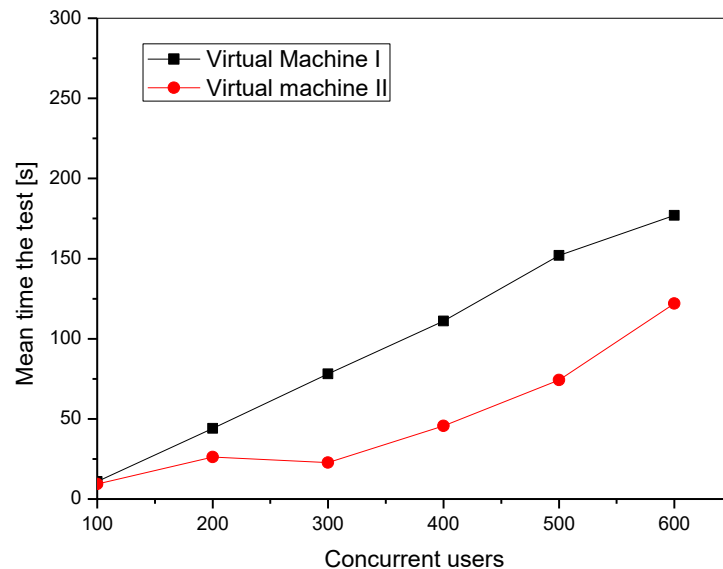


Figure 1: Mean time the Test 1

With a small number of concurrent users (<100) the server configuration has no effect on the "speed" of the platform.

Process: logging, browsing 10 pages and logout takes in this case an average of 14s for 100 concurrent users and it rises to the 170s on the WM I and to 120s on the WM II for the 600 concurrent users.

It follows that, in the best case (WM II) one process (reload the page, login, logout) takes about 10 seconds.

We obtain an acceptable time (3.5s/process) for 400 concurrent users.

In addition, there is a significant difference between the TPS for the WM I and the WM II (Figure 2).

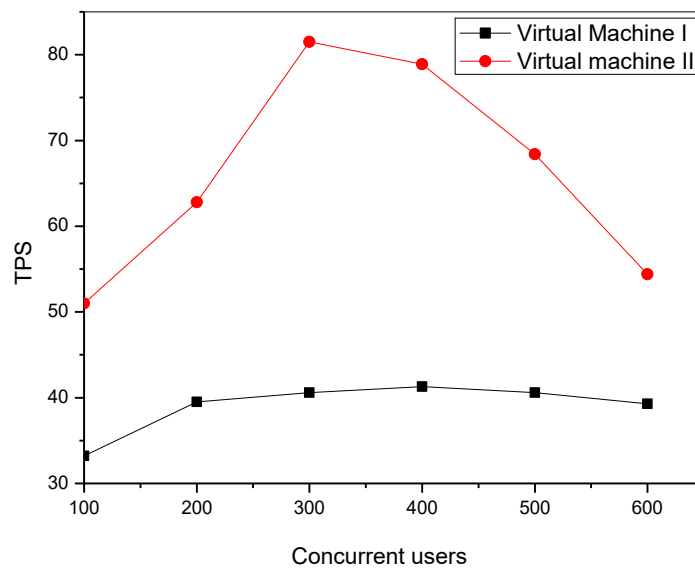


Figure 2: TPS the Test 1

3.2 Test 2 - solving quizzes

In this case, the authors tested the demand on resources while solving the quiz.

In this case, the time difference of performing the test on the WM I and WM II are even more apparent as shown in Figure 3. Process (logging, solving quiz, logout) was taken average 25s (2s/process; WM II) and 216s (WM I) for 600 concurrent users.

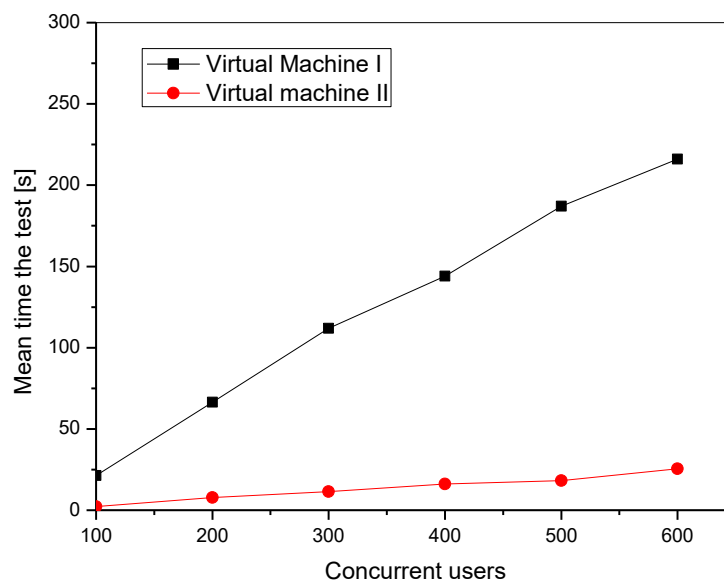


Figure 3: Mean time on test 1

As in Test 1, the Figure 4 shows the large the TPS difference for the WM I and the WM II.

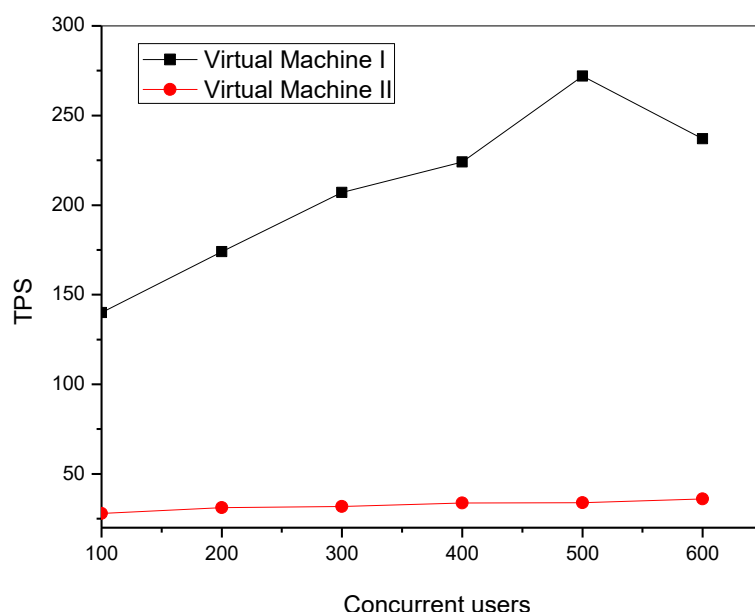


Figure 4: TPS the Test 2

4 Summary

Server configuration has a very significant impact on the performance of Moodle.

The solution Nginx with PHP-FPM and postgres SQL data base allow the proper functioning of Moodle under load of 400 concurrent users even if hardware is limited to 8x 2.2 GHz CPU, 4GB RAM.

Contrary to the early days of MOOCs, we are not currently dealing with 6-figure enrollment. So, a university with an experienced staff in the Moodle administration and with OER uses is able to run its own MOOC platform without incurring additional costs - only proper server configuration is needed.

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Part 4: Business models European MOOCs

Can MOOCs be a beginning not a fad in HE

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Governmental business models for MOOCs

Piet Henderikx,

European Association of Distance Teaching Universities

Innovating with MOOCs: Five Mistakes, and One More

Yoram M Kalman

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Is there a sustainable business model for TU Delft Extension School?

Willem van Valkenburg

Extension School for Open & Online Education, Delft University of Technology

MOOCs as one of catalysers of big changes in HE systems

Andrzej Wodecki

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Can MOOCs be a beginning not a fad in HE

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Abstract

This paper focuses on business models for MOOC offerings. More specifically the main goal has three folds: First, it summarizes the business models institutions adapt for their MOOC offerings, and second, provides a list of recommendations regarding business models for joint MOOC offerings. And finally it raises some questions about what kind of a business model should be adapted to use MOOCs as a beginning for transformation of HE. The Business Canvas Model offers a practical approach for developing a business model; however, Kalman proposes a simplified model and components of a through business model, including customer value proposition, infrastructure, and finance. Under each component, there are several questions to be answered based on results of scientific studies and lessons learned in practice. This paper tries to present both the major questions and answers of the current practice and research.

Keywords

MOOCs, business models, higher education, opening up education

1 Introduction

Over the last five years, Massive Open Online Courses (MOOCs) has been one of the major developments discussed among higher education (HE) institutions all over the world. MOOCs refer to the online courses designed for large numbers of participants, that can be accessed by anyone anywhere as long as they have an internet connection, are open to everyone without entry qualifications, and offer a full/complete course experience online for free (EADTU, 2014).

Some believe in that MOOC movement is a fad and/or a good means of industrialization of HE or western colonization (e.g. Majhanovich, 2015) while some others see it as treat for traditional HE institutions (e.g. Finkle & Masters, 2014) and a few consider MOOCs as a continuity of open education (e.g. Ozkul, 2014). Although the title of this paper is about if MOOCs can be a beginning or a fad, this discussion is left to the end. At this moment it would be appropriate that this paper favors the idea that MOOCs are just one other milestones in the process of transforming HE into more open, accessible, flexible, affordable, transparent, and accountable entity. In other words, MOOCs should be considered as another stage in the process of opening up education (Ozkul, 2014). As can be observed in figure 1, this process has started with open universities and schools moved to online learning, then with the advancements in online technologies to online learning, open courseware (OCW) and now MOOCs as well as open education resources (OER).

Another discussion in the literature is about the business models for MOOC offerings. Different sources present various models (e.g. Bernhard, 2013; Burd, 2014; Dellarocas, 2013; Hyman, 2012) but a big majority of them tend to focus on only how to make financial earnings from MOOC offerings. Kalman (2014) argues this tendency and suggests a simplified version of the Business Model Canvas. The Business Model Canvas by Osterwalder and Pigneur (2010) is actually a visual representation of business model that consists of 9 main elements of a business model to be

discussed while establishing a business. Kalman (2014), on the other hand, simplifies these elements and suggests 3 essential components to think when developing a business model.

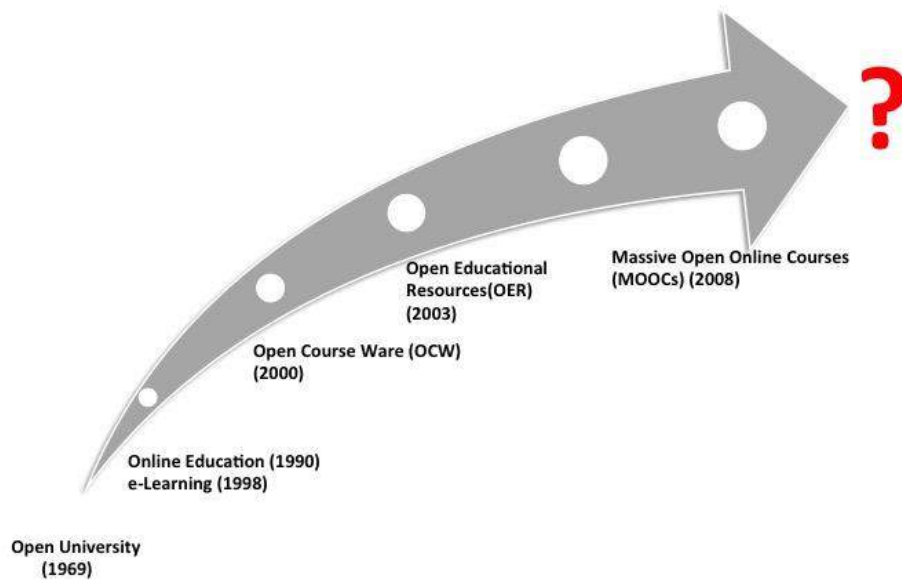


Figure 1: Milestones in opening up education

According to Kalman (2014) customer value proposition, infrastructure and finance are these essential components. Customer value proposition covers “the characteristics of the organisation’s customers and of their needs, and the way these needs are met by the organisation” (p. 6). Infrastructure means both resources and processes of an institution. Resources can be physical, such as lecture halls, labs, offices, etc. or others, such as reputation, lecturers, etc. while processes are related to all kinds of operations within the organization (e.g., student enrolment, quality assurance, fund raising, etc.). The last component is financial and includes “pricing, fixed and variable costs, ratios and margins, income sources, etc.” (p. 7).

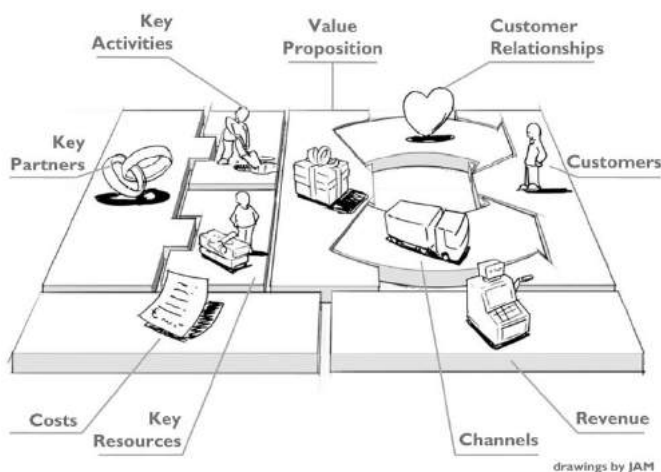


Figure 2: Business model canvas⁹

⁹ Retrieved at 8 November 2015 from <http://www.zebamc.com/introduction-to-the-business-model-canvas> on.

Kalman's model can be used to identify major questions to be answered while developing a business model for MOOC offerings (Table 1).

Table 1: Major questions to be answered while developing a business model for MOOCs

Business Model Component	Questions
Customer value proposition	<ul style="list-style-type: none"> • Who are the target groups? • What can we offer them?
Infrastructure (Resources & Processes)	<p><i>Selection of the learners</i></p> <ul style="list-style-type: none"> • How do we register the learners? • From which sources will we receive learners? • How do we market? <p><i>Content & Delivery</i></p> <ul style="list-style-type: none"> • Who will provide the content? • Who will produce the learning materials? • Where will we deliver the instruction (platform - shared, commercial, or custom) • How do we manage the platform operations? <p><i>Guidance</i></p> <ul style="list-style-type: none"> • Who will run the courses? • Who and how will we provide support (technological, pedagogical, managerial) - (students, faculty, staff, administrators)? • Who will own the copyrights? <p><i>Assessment & Evaluation</i></p> <ul style="list-style-type: none"> • Who will assess the achievement? How? • How do we assure the validity and reliability of assessment? • Who will do evaluation? How? • How do we manage the improvement processes? <p><i>Certification</i></p> <ul style="list-style-type: none"> • How do we assure the value of certificates? • Who will provide the quality assurance?
Finance	<ul style="list-style-type: none"> • What are the costs? • What can be the sources of finance?

2 Business Models for MOOCs

Although no sustainable business model has been observed yet, institutions adapt different business models for their MOOC offerings. Type of MOOC is also an essential variable determining the business model. Although everyday we come across a new type, currently there are two major types that institutions prefer. The connectivist MOOCs, or shortly cMOOCs are those in which learners take

the responsibility of their own and peers' learning processes while designers and facilitators foster collaboration among learners and/or create opportunities and environments to help learners establish connections (Kop & Fournier, 2015). cMOOCs provide great opportunities for non-traditional forms of teaching approaches and learner-centered pedagogy where students learn from one another (Yuan and Powell, 2013) and emphasize creation, creativity, autonomy, and social networked learning. On the other hand, extended MOOCs, or xMOOCs, are considered as the extension or opening of online learning courses that consists of individual and some collaborative activities including watching video lectures, completing assignments, providing feedback to other learners' assignments, participation forum activities, taking quizzes and so forth (Bates, 2014). Along with these popular types, in the literature there are variety of new types, such as hybrid MOOCs, Small Private Online Courses (SPOC) Small Open Online Courses (SOOC), etc. (Pomerol, Epelboin, & Thoury, 2015).

The type is an important factor that affects the adaptation of business model for MOOCs. However, those models in the literature mainly focus on xMOOCs due to the fact that the number of xMOOCs far exceeds the other types.

Among all the models, the *freemium* seems the one often adopted. This model consists of free registration and access to course materials and earning some amount of money for added values or services, such as more on-demand/structured interaction with the instructor/facilitator, receiving a formal certificate, joining a study group (learner community), and so forth. Institutions adopt this model mainly do not target a specific group, try to reach out as many learners as possible and use various media to marketing including 'superstar faculty' who have a good reputation among academia and can attract learners. In this model, institutions often propose badges or certificates that may be accepted by some institutions.

Another model can be entitled as *corporate training* model. This model is the one growing continually and focuses on design, development, marketing and implementation of MOOCs to meet the training or human resources development needs of corporates. In this model, the costs are paid by the corporation(s). Or, the providers charge the corporations by the number of employees participating the courses. This model does not only target the corporations but other participants who would like to improve their skills. The corporates prefer these MOOCs to reduce to cost of the human resources development; to identify the employees who are qualified for promotion; to identify and recruit talented new employees (head hunt).

A third model that intends to contribute the open up education movement and can be called as *openness* model. In this model, the institutions receive funding from their governments or foundations, such as William and Flora Hewlett, Bill & Melinda Gates, etc. to be able to create and offer the courses. These governments or foundations generally aim to provide quality and equal learning opportunities to especially underserved populations. The governments, additionally, often provide support to break the domination of other countries or cultures in education. FutureLearn, for instance, is a joint initiative of the universities in UK sponsored and promoted by the UK government against increasing domination of US MOOC providers.

Another model can be named as *marketing model*, in which providers offer courses to promote an institution (a university or for- or non-profit institution, a book and/or its author), a product or tool, or embed some advertisements into. Increasing need for recognition or visibility of universities in national and international levels is one of the drivers of this model. In this model, those who need to be marketed pay the costs. Also, MOOC providers sometimes sell the participant data to the universities or employers or other institutions.

The final model derived to meet the HE institutions' needs for providing convenient and flexible education, and for reducing costs. So, it can be entitled as *convenience model*. In this model, the providers offer either already available courses or course materials to these universities or create special ones according to their needs. Those HE institutions who would like have special courses for their needs often share the costs but those who would like to provide this convenient and less expensive learning opportunity to their students do not pay anything, students who take this route pay for the courses to be able to get certificates. Arizona State University, for instance, recognizes and accepts the credit transfers for entire level course certificates earned in EdX platform.

In sum, the current business models can be categorized into five major model: Freemium, corporate training, openness, marketing, and convenience.

3 Conclusion: Beginning or Fad

The answer of the questions raised in this paper is actually simple: No and Yes. MOOCs movement is not a fad but not a beginning too. First of all *no*, MOOCs are not new, it is a milestone of the opening up education movement. Eventually, even the most conservative HE institutions will have to open up their doors to everybody who wish to access the learning opportunity. And *yes*, MOOCs can be a beginning for HE institutions to think of open up their education and research related services. In order to be able to be a beginning, the institutions need to develop or adopt business models that best fits into their context.

MOOC providers have been trying out various business models, no sustainable 'silver-bullet' model has been developed yet and most probably never will be. Every institution must develop one or two or more according its own context. Meanwhile, Kalman (2014) provides a simple business model framework, consisting of customer value proposition, infrastructure and finance components, that can be used to think about a business model for the institutions' own context. A set of questions must be answered to develop a model under each essential component. These questions must address targeted groups, value proposition, enrollment and acceptance, marketing, technological infrastructure (platform), content design and development, ownership of the materials and courses, facilitation and facilitators, support services, certification, assessment, evaluation and quality assurance processes.

Briefly, the institutions should try to answer the questions raised in this paper according to their own context not to be able to miss the opening up education movement.

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Governmental business models for MOOCs

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Abstract

From a governmental perspective, MOOCs have to be seen in the context of three areas of higher education provision, which emerge from the tradition of Western higher education: (i) as academic knowledge sharing with citizens in society at large (open education), (ii) as knowledge transfer and valorisation for innovation in enterprises (continuing education, continuous professional development (CPD)), and (iii) as an enriching learning experience in degree programmes (innovation in the mainstream). The business models in these three areas are completely different, which in turn has implications for business models for MOOCs. Open education and continuing education/CPD are the areas in expansion in higher education. The central point of this paper is that governments, promoting this expansion, should be aware that they need to not only support the development and delivery of MOOCs, but also relate with stakeholders to increase the successful take-up of MOOCs, especially by new learner groups in open education and continuing education/CPD. Not only they should organize and fund enablers for the development and delivery of MOOCs and blended/online education by higher education institutions, they should also collaborate with civil society organisations, social partners, regions and cities to open up the uptake and use of MOOCs. National support centres for MOOCs and blended/online education, eventually linked to existing agencies, provide a valuable mechanism to coordinate governmental activities.

Keywords

MOOCs, governmental policy, institutional policy, innovation in higher education, business models MOOCs, , usage of MOOCs

1 Introduction

MOOCs are courses designed for large numbers of participants, that can be accessed by people from anywhere as long as they have an internet connection available (Jansen, D., & Schuur, R., 2015).

MOOCs are open to everyone without formal entry requirements, and in most cases offer a full/complete course experience online for free. Sometimes, they offer a taster for a broader course.

MOOCs are a spin-off product of research, innovation and education in universities, from which they are derived. Arguably, they contribute to the core mission of universities, sharing education with all citizens by open accessibility (open education), transferring and valorising innovative knowledge to enterprises (continuing education, CPD), and formally or informally integrating MOOCs as an enriching learning experience in blended degree education (bachelor, master, doctorate) (Henderikx, 2016).

Hence, MOOCs create new opportunities for governments to develop a higher education policy sharing knowledge with the broad public, upskilling people for employment and innovation in a perspective of regional development, and enhancing the quality of degree education on campus (par. 2). However, many European countries don't participate in the MOOC movement. The up-take of

MOOCs is low because of the language and because only a few universities have access to MOOC-delivery platforms. Furthermore, innovation through new modes of teaching and learning is not yet sufficiently implemented in European universities. Therefore, national support centres are needed for universities to continuously innovate education through new modes of teaching and learning. With the support of the centre, they also will collaborate with civil society organisations for taking up MOOCs for general use or for continuous education and CPD (par. 3). Hence, national centres should support the development, delivery and use of MOOCs in society and they should collaborate with civil society. The support of institutions should be embedded in a general implementation policy for new modes of teaching and learning as a cornerstone for the modernisation of higher education (par.4). With regard to opening up education for sharing knowledge in the public domain and for continuing education/CPD, the key partnership of the national support centres should be extended to cities and regions, social partners and civil society organisations (par.5). Key activities of the centres include information and communication about MOOCs to society, the promotion and eventually the co-organisation of continuing education and CPD with regional development organisations and cities, and the support of higher education institutions with regard to the development and delivery of MOOCs. The latter includes the creation of institutional leadership and staff development and other activities related to the engagement of institutions and staff (par.6). Support centres should closely connect with stakeholders: higher education institutions, cities and regions and citizens. For each of these stakeholders, they create greater value (par. 7-8). For implementing this policy, the government and the national support centre will use different communication channels and frameworks respectively to reach/out to citizens, to support higher education institutions and to collaborate with civil society and businesses (par. 9). The cost structure of such a comprehensive approach to MOOCs and online education is diversified (par. 10) and corresponds with revenue streams to be established (par. 11).

2 Key objectives of governments concerning MOOCs

Key objectives of governments concerning MOOCs are illustrated in Figure 1 and can be described under the following three sub-categories

- *Academic knowledge sharing with citizens in society at large*: MOOCs as a means to deliver courses in the public domain; open education accessible for free; inclusion of all citizens able to follow a course.
- *Knowledge transfer and valorisation for innovative enterprises*: MOOCs to promote continuing education, continuous professional development; to provide education and training for innovation in businesses; to rise employability and professional expertise; to transfer and valorise knowledge to enterprises enabling them to innovate.

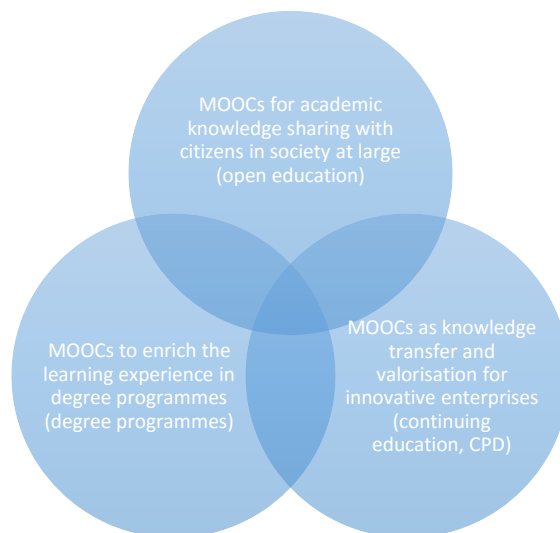


Figure 1: Key objectives of governments concerning MOOCs

- *MOOCs to enrich the learning experience in blended degree programmes* (Elen, 2014): MOOCs to complement or to deepen the learning experience of degree students; MOOCs to promote innovation in degree education; MOOCs as an experimentation space for large scale ICT-based education.

Although MOOCs mainly have been conceived as a form of open education (the first objective), from an educational and business policy perspective the three objectives are important. MOOCs have a functionality in the three areas of delivery (see Haywood, Connelly, Henderikx, a.o., 2015), which consistently emerge in Western higher education: online open education, online or blended continuing education (incl. CPD, short learning programmes) and blended degree programmes (more online in open and distance universities).

Business models for MOOCs differ according to these areas, as will be demonstrated below. They complement each other, as benefits can be shared across all three areas.

3 National issues concerning MOOCs

MOOCs were originally conceived as open courses for use in the US and worldwide, delivered in one language only. In a European context, where English is only one of many languages used for teaching and learning, „massive“ might be an issue.

Furthermore, only a selection of universities are allowed to the current MOOC platforms as most of them are dominated by Ivy League institutions. Therefore, some European countries, like France X and Spain already have established own MOOC platforms with their own development and delivery system (FUN, Miriada X. See also: French Ministry of Higher Education and Research, 2013). In most other European countries, the problem of the uptake of MOOCs is not solved, predominantly because of the language frontiers eg in Dutch speaking, Scandinavian countries, Central and East

European countries, Greece and Cyprus. In Norway, a MOOCs Commission was installed, recommending a national platform to the government (MOOCs Commission, 2014). This is hindering a thorough reach-out of MOOCs to many European regions.

Furthermore, although MOOCs are massive, one can question about the massive take-up or usage of MOOCs at the national level, especially for open education and for continuing education and CPD. The regional embedment in open education and continuing education policies is just one other challenge. There is still a long way to go for this uptake by new groups of learners and by people at work (See European Monitor, 2015).

To meet this latter challenge, governments and institutions should involve other stakeholders to promote the uptake of MOOCs, in particular civil society organisations, social partners, regions, cities and enterprises. *Opening up education cannot be successful without an opening up policy, embedded in society and with the support of civil society organisations.*

This policy can be integrated in an overall policy of governments and institutions as part of a wider modernisation agenda on new modes of teaching and learning. This would involve all three areas of provision mentioned in Fig. 1. It would focus on innovation strategies and approaches, ranging from learning design to institutional frameworks supporting course teams and the professional development of teachers. In frontrunner institutions, MOOCs are considered as only a part of these strategies. Because of the complexity of the implementation of new technologies and pedagogies and the need for a systemic approach according to a short and medium term timeframe, national support centres are needed to support these strategies.

4 National support centres

Hence, national support centres for MOOCs and blended/online education should be established with multiple functions:

- supporting the development of MOOCs by the universities;
- offering a delivery platform for MOOCs, enabling universities to use new pedagogies in delivery, where the existing platforms don't suffice (e.g. learning communities, large scale tuition, new forms of assessment);
- stimulate the uptake of MOOCs by citizens (open education);
- stimulate the uptake of MOOCs by professionals and enterprises (knowledge transfer, innovation);
- enabling universities and teaching staff to develop and deliver MOOCs as well as blended and online teaching and learning in all three areas of delivery (see fig.1): developing institutional leadership in the sector, professional development of staff, sharing new pedagogies and good practices, technology support, research and evaluation.

According to this vision, national support centres promote and support MOOCs and blended/online education as a whole, accelerating ICT-base educational innovation in European universities and the usage of MOOCs/open education in society. Some countries are planning and beginning to implement such a structure.

Without such centres, probably linked to already existing agencies, ministries and institutions have to realise these tasks by themselves, which in most countries would be unefficient (the goals will not be reached or not sufficiently) and as a whole not cost-effective. Main organisational forms might be a specific national agency or institute for digital education or a national network for digital education.

5 Key Partners

In view of the objectives of MOOCs, support centres need to engage the following key partners (see Figure 2):

- higher education institutions, developing and delivering MOOCs and/or organising and blended/online education;
- civil society organisations as a bridge to citizens for the uptake of MOOCs (supporting the reach-out of MOOCs);
- regional development organisations, cities and other public authorities, professional training institutes, social partners activating the uptake of MOOCs for innovation in enterprises.

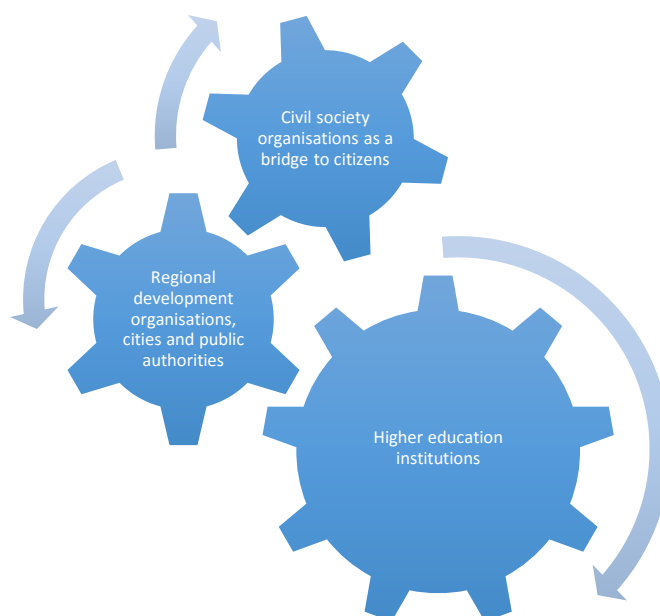


Figure 2: Key partners for national MOOCs support centres

It should be clear by this point that the massive usage of MOOCs in the context of open education and continuous professional development can only be successful, when civil society, regions and citizens are involved. In EU28, because of linguistic and educational borders, promoting active engagement with MOOCs has to be organized at the national or even regional level.

To be effective, international MOOC platforms as Coursera, EDx and Futurelearn should be involved with these national support centres in each country to rise a European-wide participation in MOOCs and to have impact on continuing education, skills development and knowledge in all countries.

6 Key Activities

Key activities of the national support centres, to be organised and funded by governments, include three main clusters:

Cluster 1: Information and communication to civil society organisations and citizens through:

- direct marketing of MOOCs and open education to citizens (advertisements by media)
- information and communication to civil society organisations about MOOCs and open education initiatives and their relevance. Subsequently, these organisations create a culture of learning through their activities, magazines and other media
- joint information and communication actions by governments and civil society to reach-out to citizens
- *Cluster 2: Supporting the use of MOOCs for innovation in enterprises* in collaboration with regional development organisations, professional networks, social partners:
 - direct information and communication to enterprises concerning the usage of MOOCs and blended/online education for knowledge transfer and professional development for innovation in enterprises
 - promoting and co-organising continuing education and CPD with regional development organisations and cities, involving MOOCs and blended/online training initiatives

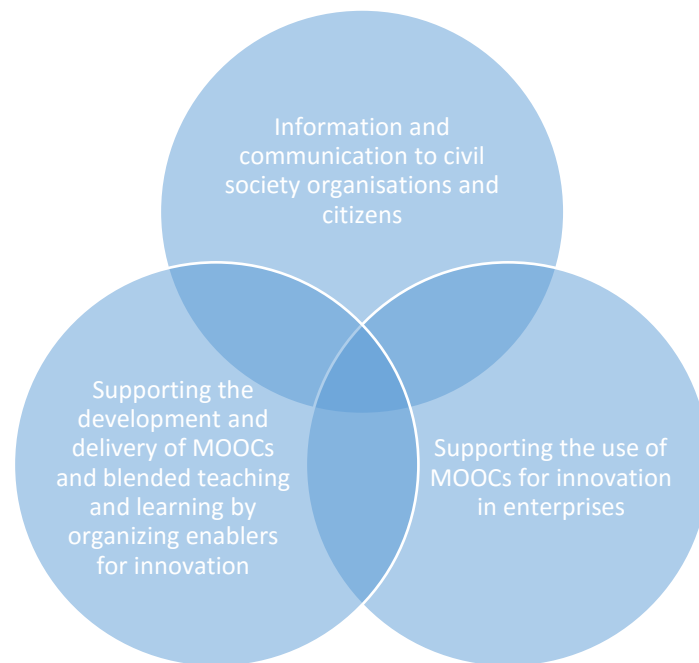


Figure 3: Key activities for national MOOCs support centres: three clusters

Cluster 3: Supporting the development and delivery of MOOCs, blended teaching and learning in universities by organizing enablers for innovation like (See Laurillard, 2014; Haywood, Connelly, Henderikx, a.o., 2015). Such enablers are:

- *Leadership support for innovation*: support leaders who create an institution-wide innovation strategy and a continuously innovative environment for the development of MOOCs and blended/online education in universities
- *Teacher professional development*: promote continuous professional development for online teaching and learning in MOOCs and blended/online education
- *Learning technology tools, systems and services*: support learning environments which are user-friendly and open for new pedagogies, with learning design, learning community and assessment tools for MOOCs and blended/online education
- *Communities of practice*: promote the exchange of patterns of good practice by teachers in MOOCs and blended/online education (subject-related);
- *Shareable resources*: stimulate the development and use of open educational resources/ open licensing and learning design tools, which possibly will reduce the cost of education and will enable teachers to build on each other's work;
- *Evaluation and research evidence*: fund research and innovation to provide evidence on new modes of teaching and learning and produce tools for developing innovative practice in MOOCs and blended/online education.

In any governmental policy with regard to online and blended education and MOOCs, it should be clear where these activities organizationally are located.

7 Connecting with stakeholders

With regard to MOOCs and blended education, stakeholders have different expectations, on which national support centres should focus in their relations with stakeholders:

- Citizens may expect that knowledge is opened up to society by flexibly accessible education. Citizens should be informed about all possibilities of sharing knowledge and following courses for their further development. Civil society organisations expect to be involved in awareness raising and communication actions, in co-creating additional value by making the participation of courses more relevant and by stimulating and activating their members to participate.
- Regions, cities and enterprises expect from governments that they develop active policies for innovation and employment. Professional networks, training institutes and social partners play a pivotal role in these policies, co-creating additional value by bringing in their expertise with regard to the organisation of continuous education and CPD for innovation in enterprises.
- Higher education institutions expect governments to have a clear vision about innovation in higher education and to enable institutions to innovate with regard to MOOCs and blended/online education (see enablers above). Higher education institutions co-create value by developing institutional policies with this regard.
- National support centres are established by governments and higher education institutions as agencies, involving stakeholders mentioned above. National support centres coordinate governmental funding (eventually partly), actions and relationships, vis à vis citizens, regions, cities and enterprises, and higher education institutions.

8 Value Creation

From the perspective of a coherent governmental MOOCs policy, through national support centres, governments have the potential to create greater value for:

- Citizens, the end-users of MOOCs in the framework of an open education policy. To make the bridge to the citizens, civil society organisations are co-creating this value, each from their perspective and involving new dimensions to open education. Governments may be able to reach citizens also directly by advertisements, website and other direct communication tools.
- Regions, cities and enterprises, by involving MOOCs, continuous education, CPD, knowledge transfer and valorisation in innovation frameworks for regional development. In these frameworks, professional knowledge networks, training institutes and social partners professional networks co-create value.
- Higher education institutions, by enabling the management and teaching staff to develop and deliver MOOCs and blended/online education. As a result, institutions are enabled to be continuously innovative throughout the organisation, to enhance the quality of the course and hence of the learning experience and student satisfaction. As far as continuing education

and CPD is concerned, new income can be generated by large scale online course offers to regions, cities and businesses.

In the national support centres, all stakeholders mentioned collaborate and advise on governmental funding and the support of activities related to the development, delivery and usage of MOOCs and blended/online education in the region.

9 Cost Structure

Following the above approach, the cost structure of MOOCs and blended/online education needs to consist of:

- *cost related to reaching-out to citizens:* awareness raising and information through printed press and audio-visual media; setting up a unique national portal.
- *cost related to integrating MOOCs and blended/online learning in regional innovation policy, cities and enterprises:* contribution to knowledge transfer, continuing education, CPD cost, in a steady state to be shared with companies
- *cost related to enablers for the development and delivery of MOOCs and blended/online education:* leadership support, CPD for teaching staff, educational technology, exchange of good practice, sharing of resources (OER, open licensing), research and evaluation
- *cost related to the development and delivery of MOOCs by higher education institutions:* teaching staff cost, technology cost, e-learning and media expert costs. In the steady state, this cost might be shared with the institutions.
- *cost related to the national support centre:* the centre, led by a Board, would need to coordinate the funding of all cost components mentioned and also all activities which are organised for citizens, regions, cities and enterprises, and higher education institutions. For doing this, the national centre involves all stakeholder organisations mentioned. This requires a management cost, but the advantage is that the streamlining of a national policy for MOOCs and blended/online teaching and learning is guaranteed.

10 Revenue Streams

Governmental revenue streams would need to be organized as follows:

Institutional funding for the development and delivery of MOOCs and blended/online education through (a combination of) instruments as:

- project funding;
- performance-based funding with regard to the achievement of targets with regard to MOOCs development, delivery and take-up;
- earmarked funding for new modes of teaching and learning;
- funding for excellence in teaching and learning.

Funding of the national support centre for MOOCs and blended/online education, consisting of:

- the funding for reaching out to citizens involving civil society organisations;
- the funding of the integration of MOOCs in the innovation and regional development policy;
- the funding of enablers of MOOCs and blended/online education (as explained above);
- the funding of the management cost of the national centre;
- the funding of governmental projects (if not covered by institutional funding);

11 Conclusions

So far, MOOCs have not caused a disruption in higher education they have activated discussions about the implementation of ICT-based teaching and learning in higher education provisions and announce a new era and development stage in higher education pedagogies. This will no doubt play out in the next five to ten years, creating a new landscape for higher education. The basic assumption of this paper is that MOOCs and online learning will definitely influence mainstream degree education (blended learning) and enable the expansion of the areas of continuing education (more online) and open education (completely online). New business models will be developed by which these relatively new areas will flourish, valorizing the entire educational offer of universities and contributing to the mission of each of them. At the end, new concepts for higher education and higher education provisions will emerge.

Frontrunner universities are taking the lead in these developments. They are shaping the future instead of undergoing it. Leadership of these institutions should be supported in order to help institutions continuously innovative, which will facilitate teacher professional development, the creation of communities of practice, and the instalment of learning technology tools and systems. When combined this investment will lead to systemic change in higher education.

To accelerate this process, governments have to support the development and delivery as well as the uptake of MOOCs in a country. Hence, partners are not only higher education institutions, but also civil society organisations, regions and cities. This should be embedded in a national policy with regard to new modes of teaching and learning in mainstream degree education, continuous education and CPD and open education. The key point of this paper is that such a strategy requires the establishment of national support centres as an agency or a network of universities, bringing together all stakeholders. These centres should not only focus on the development and delivery of MOOCs, but also on their uptake. Without massive usage, MOOCs are a contradictio in terminis.

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Innovating with MOOCs: Five Mistakes, and One More

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Abstract

MOOCs are considered one of the most innovative recent trends in higher education. Decision makers in almost every higher education institute struggle with the question whether they should innovate with MOOCs at their institute. Basic principles of innovation management provide guidance about the right way to pursue innovation, and this brief summary outlines these principles in the context of decisions about innovating with MOOCs in European higher education.

Keywords

MOOCs, innovation, strategy, business model

1 Introduction

Innovation is defined in the management literature as a "multi-stage process whereby organizations transform ideas into new/improved products, service or processes, in order to advance, compete and differentiate themselves successfully in their marketplace" (Baregheh, Rowley, & Sambrook, 2009). Thus, an innovation is not only a new idea, and not only a novel product, service or process. Rather, from an organizational perspective, to be innovative, the novel product, service or process should help the organization better achieve its goals in the marketplace.

One helpful way to explore whether an innovation improves the organization's ability to achieve its goals is to examine the influence of the innovation on the *business model* of that organization. The business model of an organization is a

"...conceptual tool that contains a set of elements and their relationships and allows expressing the logic of a specific firm. It is a description of the *value* a company offers to one or several segments of *customers* and the architecture of the firm and its network of partners for *creating, marketing and delivering this value* and relationship capital, to generate profitable and sustainable *revenue streams*" (italics added. Osterwalder, Pigneur, & Tucci, 2005, pp. 17–18).

In short, a business model is a description of the organization's customer value proposition, how that value is created and delivered by the organization, and the financial consequences to the organization.

2 Five mistakes

Given that innovation occurs when the new or improved products, services or processes positively influence the business model of the organization, what are the major mistakes decision-makers at a European higher education institute (HEI) can make when they consider whether they should innovate with MOOCs at their institute?

2.1 Failing to examine the strategic implications of MOOCs

MOOCs are a significant innovation in higher education, and as such, decisions whether to pursue them or not are a strategic decision for the organization. As such, the decision should involve not

only experts from various parts of the HEI (e.g. technology, teaching, research, marketing), but also top decision makers.

In the European context, special attention should be paid to the unique strategic challenges of European HEIs, in particular those related to the modernization agenda of Europe's higher education systems (The European Commission, 2011).

2.2 Conflating more than one HEI business models

Different HEIs have different business models (Kalman, 2014), and HEIs should examine the impact of MOOCs on *their* business model, and not on the business model of institutes which have a significantly different business model. For example, the business model of a world-class western research university is impacted differently by MOOCs than the business model of a teaching oriented liberal arts college, of a community college, or of a research institute.

In the European context, it is especially important to pay attention to the fact that business models of USA based HEIs, where the MOOC movement received most of its initial momentum, are significantly different from business models of European HEIs. In particular, the funding models are different, as well as the involvement of the private sector and of government in higher education. For a detailed discussion of the relationship between these differences and the MOOC movements in the USA and in Europe, see Jansen and Schuwer's report on institutional MOOC strategies in Europe (2015).

2.3 Failing to examine the impact of MOOCs on the customer value proposition

The customer value proposition is the most important component of the business model, and thus it is essential to examine the impact of the MOOCs on the institute's present customers, potential customers, and other stakeholders.

In the European context, it is important to remember that an important part of the customer value proposition should include aspects which respond to unique European values such as collaboration and cultural diversity (EADTU, 2014).

2.4 Failing to examine the impact of MOOCs on the institute's processes and resources

MOOCs influence institutes' processes and resources both positively and negatively. All these major influences should be evaluated. This includes processes such as accreditation, course development, quality assurance, student recruitment, research, and budgeting, and resources such as human resources (e.g. faculty and administrators), physical resources such as buildings and IT infrastructure, and most importantly, reputation (Kalman, 2014).

2.5 Failing to examine the impact of MOOCs on the institute's finances

High quality MOOCs require extensive financial resources, while their financial benefits are more subtle and tentative. The full costs, as well as the possible revenue streams that will be impacted must be evaluated (e.g. Modell, 2003; Nazeeri, Moore, & Benjamin, 2015).

3 And one more, in lieu of a conclusion

We briefly outlined why the decision whether or not to innovate with MOOCs should be preceded by a careful strategic process. Nevertheless, any innovative decision is associated with risks and uncertainty. Once these risks are mapped and discussed, it is often easier to decide to avoid them by not innovating. However, avoiding innovation is the worst mistake organizational leaders can make. Without innovation institutions become stagnant, talented and creative faculty and staff members

disengage and even leave, and students vote with their feet. The European Modernization Agenda (The European Commission, 2011) requires bold innovative actions to move Europe towards meeting its ambitious higher education goals for 2020 of meeting the projected growth in knowledge-intensive jobs, reinforcing Europe's capacity to benefit from globalization, and sustaining the European social model.

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Is there a sustainable business model for TU Delft Extension School?

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Abstract

In 2014, Delft University of Technology started with the Extension School for Open and Online Education to move into the world of online education. Early on, we realized that producing MOOCs alone, did not contribute to a sustainable business model for a university. This is why we broadened our scope and considered our open education activities as part of our funnel towards paying (online) students.

In this paper, we explore the different sources of revenue and the non-financial benefits of the Extension School.

Keywords

Business model, online education, MOOCs, sublicensing, open education

1 Introduction

TU Delft is the oldest technical university in Netherlands. The university offers 16 Bachelor programmes and more than 30 Master programmes on campus in the fields of Science, Engineering and Design (TU Delft, 2015).

Since 2007, Delft University of Technology has been involved with Open Education. We started with publishing the course materials of our campus courses on our OpenCourseWare website. In 2010, we started with iTunesU and in 2012 we joined the MOOC movement with joining the edX Consortium.

In 2014, this led to the start of the TU Delft Extension School for Open and Online Education. As a traditional brick-and-mortar university, we are moving into the world of online education.

2 Business Model

Early on we recognized that, if you only consider MOOCs as online education, there is no sustainable business model for a university. This is why we broadened our scope and considered our open education activities as part of our funnel towards paying (online) students.

The first two years of the Extension School have been dedicated to exploring different sources of revenue. This exploration should lead to the right mix of sources that brings a financially sustainable future for the Extension School. The Extension School doesn't have to make profit, but should be able to break-even.

3 Sources of Revenue

There are different sources of revenue, which we are exploring as part of the activities of the Extension School. It is important to mention that for all sources we have support from our Executive

Board and our faculty. An important criterion for us is that we have to stay close to our open strategy.

3.1 MOOCs

TU Delft Extension School has produced 25 MOOCs. All of them are offered on the edX website. In total, these MOOCs have attracted 670.000 enrolments globally. On average a TU Delft MOOC attracts 17.500 learners, while the most popular courses attract more than 50,000 learners.

Approximately 2% of our learners choose to pay for an ID-verified certificate; on average this are 200 paid certificates per course. The revenue is split between edX and the university. Research has shown that learners who pay for this certificate are much more likely to pass the course (approximately 50%, with the highest pass rates above 70%).

However, the interest for ID-verified certificates varies per course subject. Learners signing up for business & management, data analysis & statistics and law are much more prepared to pay for a certificate than learners that sign up for courses on language, history and humanities (edX, 2015). On the edX platform, we also see differences per country in the willingness to pay. Dutch and Italian learners are among the highest with regards to preparedness for paid services (edX, 2015).

The popular MOOCs can break-even with the revenue of certificates in less than 5 runs. But this is only for a small selection of courses, the 'blockbusters'.

This is a typical freemium model: attract large numbers of learners to a free product by offering an 'amazing value proposition', then up-sell product add-ons or value-added services.

3.2 Sublicensing

In the early stages of the programme, we decided to only sublicense the course materials of our MOOCs. If an organisation is interested in the complete course, including the assessment and the teacher effort, they have to license the course (Ouweland, 2015).

This summer, Solar Energy course ran as the first of our courses on the EdRaak platform with 20.000 learners in the Arabic Region. After a careful selection, the TU Delft professor for this course selected a former PhD student as 'surrogate' professor. Not only did the surrogate professor manage the forum discussions, he also added extra content, such as weekly summaries and cases about local issues with solar energy. Sublicensing can be based on a one-time fee or based on the number of enrolled learners.

3.3 Online Courses

The online courses (Bachelor and Master level) that TU Delft offers are highly specialized courses that will not attract a massive amount of students. These courses can be classified as high value, low volume and high price 'products'. We design the course for 10 to 50 students, so the lecturers can give individual feedback and support to all students. These courses have a duration of 8 to 15 weeks similar to on-campus courses, and the students receive a certificate based on the European Credit Transfer System. The price of online courses is based on the non-EU tuition fee of our campus students. A typical course costs 600 to 1.000 euros.

3.4 Professional Education

With the start of online courses, we noticed that professionals have different needs. A survey conducted among our learners provided three clear insights (Topolovec, 2015):

- They work an above-average number of hours per week
- They want to apply the knowledge directly to their work

- Most of them already have a Bachelor or Master degree

Based on these insights, we have created Professional Education (ProfEd) courses that are shorter (4-5 weeks), take less time per week (4 hours on average), and are more applicable to the students' work.

The professionals also receive a certificate that is not based on ECTS, but on Continuing Education Units (CEUs). These CEUs are common in professional education course in the US and many other countries around the world.

These career development courses attract between 200 and 500 students each, and the prices, which are based on the target audience, range from 250 to 500 euros. This provides enough revenue to be profitable after just one run. This, and the fact that ProfEds offer more flexibility for teaching staff and better connection with the audience, made us decide to focus more on these ProfEds and less on online Msc and Bsc courses.

3.5 Corporate Collaboration

Many companies are interested in cooperating with a top university, such as ours, but most collaborations are research-focused. Part of our program is to start collaborations in the field of open and online education.

Anka Mulder (2015a) lists 4 types of cooperation that we are currently working on:

- Using MOOCs as part of a blended course for the company
- Co-developing a MOOC
- Creating extra weeks specifically for that company
- Using the knowledge of companies to enhance and enrich our courses

The revenue from these activities can pay for their development and leads to extra paid enrolments in these courses.

3.6 Grants

A single grant doesn't provide sustainable income, but a portfolio of externally funded projects can certainly take care of some part of the financing. TU Delft has received grants from different national, European and international organisations.

The difficulty with grants is that it also means extra work, such as meetings, administrative tasks and dissemination activities. This extra work has to be balanced with core activities of your programme.

3.7 Enrolments for campus programmes

Our MOOCs provide the university with a new podium to market our regular Bachelor and Master programmes. For the enrolment for 2015-2016 academic year, more than 400 applicants could be matched to our MOOC enrolments. From those applicants 115 started in September with one of our 2-year master programmes. The three MOOCs with the highest transfer rate are *Data Analysis to the MAX()*, *Delft Design Approach* and *Solar Energy*. Students from these MOOCs were admitted to almost all master programmes. For some, there was a clear path between MOOC and MSc programme; for example, from the *Solar Energy* MOOC to the *Sustainable Energy Technology Msc*, and from the MOOCs on *Aeronautical Engineering* to *Aerospace Engineering Msc programmes*.

Attracting top international students is an important objective for the university. Though we cannot say there is a causal connection, the correlation is nevertheless promising.

4 Non-financial Benefits

There are also benefits that don't generate money, but can be of strategic value for the university.

4.1 Reputation and Exposure

Improvements in our reputation and global exposure are a good example of this. In the last two years we have seen more international enrolments in our master programmes from countries where we do not have any marketing campaigns.

4.2 Campus Education

More and more people are writing that the biggest change of online education is happening in our on-campus education (Kim, 2015; Dellarocas, 2015; Covitz, 2015).

At TU Delft, we see the same thing happening. The focus of a traditional research university is not specifically on education. This is changing! More and more attention is directed toward education as a spin-off of our online activities. Our Executive Board declared this academic year as the "Year of Education" (Mulder, 2015b), and started different projects that benefit from this development.

For the future of the university, this may be even more important than the financial revenue of the Extension School.

4.3 Reuse on campus

All of our MOOCs are used in a blended way on campus in different setups. This has led to a quality impulse of our campus education. For example, in the course of Arno Smets (2014) the pass rate went up from 71% to 89%, average grade went up from 6,5 to 7,1 (on a scale of 1 to 10) and 69% of students preferred the flipped classroom approach. Similar results are visible along all campus courses that use our MOOC content. Lecturers also start to use more OER of others.

4.4 Research

More and more lecturers also use the MOOCs for research. As Hermans (2016) wrote that MOOCs are a great way to collect research data. In here MOOC on data analysis they asked participants to click labels in an online game and they got 160.000 answers to test with. Other MOOCs have experienced the same kind of results.

5 Conclusion

Although we are in the early phases of exploring possible sources of revenue, we already see that there is revenue being generated. The challenge is to find the right balance between focus on revenue generation and our mission on educating the world. However, the non-financial benefits alone provide a strong reason to continue these online activities. It seems that the Extension School is here to stay.

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MOOCs as one of catalysers of big changes in HE systems

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Abstract

Dynamic changes in the society and workplace should result in appropriate changes in Higher Education systems. Among the most important trends we identify growing number of educational resources available for everyone and anytime, fast pace of knowledge outdated, a growing importance distant/freelance work and threat of Artificial Intelligence/robots for human jobs. All that leads to potential transformation of education, including changes in the way we learn and teach, role of a university or the processes of feedback and certification. Massive Open Online Courses (MOOCs) appear to be catalyzers of these transformations – the key question is how can we utilize its full potential in our institutions?

Keywords

HE Systems, MOOC, future, society

1 Motivation

Our world is changing. Many factors influence the future of the workplace, strongly influencing competencies required to efficiently perform a job.

Imagine a young freelancer. (S)he probably works in 3-5 different projects in parallel, for different customers, collaborates in multinational teams, with subcontractors in different localization. Technology, tools and requirements instantly change from contract to contract, and updating the necessary skills and knowledge becomes a real challenge.

What can we, as workers in Higher Education sector, change in our universities in order for (s)he looks for the knowledge resources on our websites/building as a first place?

2 Key contexts

Let's start with some the most important contexts.

2.1 There are a lot of knowledge resources at hand...

Young worker shouldn't have problems with access to high quality knowledge. Platforms like Coursera.org, EdX.org or Udacity.com offer plenty of high quality, very practical and inspiring Massive Open Online Courses (MOOCs). Moreover, many experts in very different areas offer their consulting services 24x7, not counting very active groups on social media, e.g. LinkedIn. Systems like WolframAlpha.com offer extremely useful scientific tools, and platforms like KhanAcademy have very efficient learning process personalization systems implemented.

That's beautiful. Problems? First, due to a huge amount of educational content a signal to noise ratio becomes very low – students need some support in choosing the right contents, since their attention is probably their most scarce resource.

And second: there is a threat of so called “cognitive division” (see IFTF (2013)): some people will love learning and learn more and more, every time, everywhere, but some will stop learning at all. Consequences easy to imagine...

2.2 ...but our world is changing rapidly

2.2.1 Knowledge is rapidly outdated

Some researchers and practitioner state, that e.g. in IT sector knowledge is changing every 5 years. Not only technologies change, but also fundamentals (e.g. shift from SQL to NoSQL databases). Due to mass customization and shortening of product life-cycles knowledge must be updated almost instantly.

2.2.2 More and more people work at distance and as freelancers

Portals like upwork.com (former odesk.com and elance.com) serve as a source of work for thousands of specialists, in very different areas. Working at distance, in multicultural environments for many customers and projects in parallel requires completely new set of skills and competencies.

2.3 Artificial Intelligences and robots soon will replace humans in many jobs

Self-driving cars are allowed to drive in some US States (e.g. Daimler Benz trucks in Nevada, see Bloomberg (2015), and Google and Apple are investing a lot in their autonomous cars eco-systems. On the other hand, IBM Watson (AI from IBM Corp.) serves as a doctor in cancer hospitals in US and India: it makes diagnosis, recommends treatments, etc., see IBM(2015). Thus, AI and robots may soon substitute many humans: not only unqualified workers, but also experts.

We should prepare our society for such changes, thus large datasets, AI and robots will play a crucial role in the future Higher Education (HE) ecosystem.

3 Competencies of the future

Keeping these contexts in mind, what are the future workplace competencies? A very interesting answer is provided in the report by Institute for the Future (ITF 2011).

The most important will (probably) be: sense-making, social intelligence, novel and adaptive thinking, cross-cultural competency, computational thinking, new-media literacy, transdisciplinarity, design mindset, cognitive load management and virtual collaboration.

Universities of the future should change their teaching methods (rather than content) in order to better design situations, in which students will develop above mentioned competencies.

4 Potential transformations

What will change in the future educational landscape? ITF report (ITF 2011) suggest the following.

4.1 Learning

Thanks to many different technologies (augmented reality, mobile, etc) learning will be possible anywhere and anytime. Thus, we may expect a shift from episodic to continuous learning.

4.2 Teachers

In the context of great number of knowledge resources publicly available, the role of the teacher should shift from assigning to enticing (motivating) with content. Moreover, future teachers will be content curators rather than content creators.

4.3 Universities

Universities now work at a single scale defined by space (campus size, buildings, etc) and number of students. Due to technological changes and new market demands it may happen, that relatively small schools and organizations (e.g. Udacity) will operate at large scale (MOOC's with thousands of students each). That will imply in many cases a strong strategic and operational shift within Universities: learning to operate on different scales.

New competencies required in the workplace and MOOC's at hand will also probably change the role of the classroom: from lecture hall to collaboration workspaces. A strong support for this thesis come from trends in educational methods like flipped classroom, or coaching and mentoring as new teaching methods.

4.4 Diplomas and grades

A very interesting study performed by upwork.com showed that the most important factor employees take into account when looking for the subcontractor are opinions and ratings provided by customers. University and college degree are completely irrelevant. That may signal a new trend: from degrees to reputation metrics.

As far as a feedback is concerned, in more and more MOOCs platforms (like Udacity.com or KhanAcademy.com) traditional grade system is exchanged by instant feedback. If that trend continues, in HE system we may predict a shift from grades to continuous feedback mechanisms.

5 MOOCs as catalyzers of change in Higher Education

Take into account all the trends presented above, the key question is what will be a place of HE in the society of the future? And how MOOCs can catalyze this transformation.

It seems like MOOC's may serve that transformation in the following ways:

1. It will make learning very popular. MOOCs are open, and in many cases very practical and inspiring. That may cause many Long Life Learners (LLLs) try it out, and engage.
2. The more learners in MOOCs, the more efficient learning process and better learning experience
 - a. The more students engage in learning (thanks to MOOCs), the better learners their become. LLL's will experiment with different learning techniques, will identify what works best for them, and will learn more efficiently. And with pleasure.
 - b. Moreover, the more learners active, the more data are stored in MOOCs platforms, and better learning personalization algorithms.

3. MOOCs may also catalyze transitions:
 - a. From occasional to continuous (anywhere, anyhow, anytime) learning
 - b. From teaching to coaching, mentoring and collaboration
 - c. From grades to instant feedback
 - d. From diplomas to ratings.
4. Naturally, MOOC's may serve also as an experimental lab for testing different instructional design and educational methods.
5. And probably many more...

As we can see, it seems like MOOCs may catalyze almost any transformation presented in this short article. Thus, a new crucial question arises: what is the best possible way of incorporating MOOCs in a curricula of modern, traditional University? There are many possible option, but since promoting change in traditional HE Institution is tough, the strategy should be very carefully chosen and executed.

6 Conclusions

We live in interesting times. We face technological and communicational revolutions on one side, and more and more global cultural and social tensions on the other. Education probably had never before such an important role in bridging these worlds and factors together. How we, as HE educators, can help young high-achievers from developed countries to realize their potential not forgetting about masses of low-educated young people from poor ones?

MOOCs seems to be a very important variable in the equation. As teachers we should stimulate students to take the best courses on-line, teach them how to learn on MOOCs (especially: how to manage time and energy during such courses), and instantly discover their passion. As policy makers, we should encourage teachers to instantly develop their skills and knowledge on MOOCs, not only because it's good for self-improvement, but also helps to better understand students learning processes. And, last but not least, we should prepare for changing roles of the university, diplomas and labour market.

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Part 5: Pedagogical approaches in European MOOCs

Opening up education - some pedagogical considerations

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UNINETTUNO and the MOOCs, Origins, results and new perspectives

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MOOC as Transmedia Storytelling

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OpenQuest: Designing a Motivational Framework for MOOCs Instruction

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The Research Results on Pedagogical Approach in MOOCs: Lithuanian Case

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A summer-day's MOOC

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MOOCs pedagogical and didactical approaches

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How We Use Video in KU Leuven MOOCs

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Opening up education - some pedagogical considerations

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Abstract

In the “Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions” from September 25, 2013 the Commission advocated strongly to ‘Opening up Education’ through ‘Innovative teaching and learning for all through new Technologies and Open Educational Resources’

We strongly support this vision for the future and aim at realising it within a Danish context with a population of five million. However, we also retain a certain scepticism and remember the saying of David Wiley: “If content is all we need, why would we need universities? Libraries could do the job!” In order to open up education, we need to develop a pedagogical framework for knowledge building to supplement the tradition for knowledge acquisition in higher education.

In this article we present our strategic considerations for organising a master programme in ICT-based Educational Design as Open Online Learning for the benefit of the full-time students registered at the university (making the programme more flexible as dual-mode education) and at the same time opening the programme for students/learners outside the university (colleagues at universities and university colleges, but also teachers at high schools and primary schools, and staff involved with informal learning at museums and/or educational planning in companies, plus prospective future students.

The focus in this article is on the strategic pedagogical considerations, whereas the more business model oriented considerations are presented in the article: “Building OOC layers on top of existing courses”.

Keywords

Opening up education, cmooc, ooc, independent learners

1 Opening up education

In the “Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions” on September 25, 2013 named “Opening up Education: Innovative teaching and learning for all through new Technologies and Open Educational Resources” the Commission advocates the point that

“Open technologies allow All individuals to learn, Anywhere, Anyway, through Any device, with the support of Anyone” (...) Thanks to Open Educational Resources (OER), and namely MOOCs, teachers and education institutions can now reach thousands of learners from all five continents simultaneously, showcasing that language is not always a barrier. Cooperation is enhanced by allowing learners, educators, researchers and institutions to create, share and discuss content with peers from all over the world. (p. 3).

New educational technologies offer new possibilities for learning to be utilised by institutions, not least to provide open education. MOOCs are currently debated from many different perspectives, and MOOCs are both praised as a disruptive innovation and as a pedagogically old-fashioned approach to education (Dolan, 2014; de Langen & van den Bosch, 2013; Chen, 2014). Much debate revolves around number of participants and completion rates as a measurement for openness in education (Jordan, 2014; Clow, 2013). However, in this paper, we argue that the radical challenge is the support of independent learners with personalised use of the new media. So far the default approach adopted by most institutions has been to create the learning environment around the teacher as the key person to deliver the knowledge and to organise the weekly schedule for learning activities. However, new options hold the potential for creating personalised learning environments for the learner – a learning environment built by the learner/student/pupil incorporating all learning experiences, formal as well as informal, according to the learner's needs and interests (Atwell, 2007, Wilson et al., 2006). Formal learning organised by institutions may be part of this, but so will informal learning, generated from net-activities, participation in cultural events, media consumption, etc.

The educational challenge is to teach the learner how to build this personalised learning environment and how to further develop it – to become an independent learner. For the researchers and teachers, the tasks are to develop technologies that support the learning process and remove barriers to learning through the introduction of more engaging learning activities.

2 Danish Master's Programme

This paper is based on our strategic considerations on how to open up a Danish Master's programme in ICT-based Educational Design to a variety of target groups that will connect to the educational content available, as open educational resources (OER), in different ways (Bang et al. 2014).

The Master programme is developed for full-time students who have a bachelor degree in teacher education, or related pedagogical fields/university subjects aimed at teaching. The candidates learn to integrate and design digital tools into the teaching and learning practice of their institutions. So far the majority of applicants come with a Teacher education background and are recruited from all over the country. The programme is a full-time study programme for two years, organised as dual-mode education with mainly on-line activities supplemented with a few face-to-face seminars at Aarhus University.

We are convinced that approaches to learning supported by IT and implemented from a didactic perspective are the way forward to renew education in Denmark through the building of personalised learning environments (Wilson et al. 2006; Atwell, 2007). Therefore we want to offer the content of the Master's programme and the research behind, to a larger audience. The group we have in focus are colleagues at other educational institutions – primarily teachers at universities and university colleges, but also teachers at high schools and primary schools, and staff involved with informal learning in museums and/or educational planning in companies. A third target group for our consideration are potential new students in the Master's programme for ICT-based Educational Design. To reduce dropout, we aim to improve our introduction to the study by giving prospective future full-time students access to the learning environment in order to test their abilities and enhance their readiness for success.

3 Content and pedagogical practice – didactic considerations – learning activities

The curriculum – the content – is made available for the students as Open Educational Resources and form a fundamental component of the key learning activities in the programme. The overall pedagogical philosophy behind the educational programme is a student-centred approach. To engage the students, the courses aim at facilitating student collaboration, discussion/dialogue and production.

Following on this last point, all courses focus on encouraging students to produce. Productions could be as simple as text, but may also include a variety of media presentations and especially video. Students are divided into groups, and many of the assignments are group assignments that require students to collaborate closely. Finally, students provide each other with feedback on their assignments and productions, thus engaging in dialogue, peer review and discussion.

A range of digital tools have been employed to support the activities of the courses. Forums (Buddypress) are used for each course to communicate on practical issues. A multiuser blogging platform (Wordpress) is used for both student and teacher blogging. A tool for students' collaborative writing (Google Docs/Drive) is used to support group work. Students share documents in groups and with the teachers, enabling teachers to follow the writing process and provide feedback. Google Docs/Drive enables synchronous editing of documents, comments with discussions, and a chat within the documents. The objective of Google Docs/Drive is to support close collaboration between students, who are oftentimes not able to get together. Finally, screencasts are used for short video lectures (YouTube), and videos (YouTube) are used for student presentations. The teacher video lectures are relatively short presentations of themes, concepts and theories from the courses.

The Wordpress blogging system combined with YouTube play a key role in opening up the educational programme. At the beginning of the first semester a main blog of the educational programme is created. The blog provides an open space for both students and teachers to write posts related to the course. The blog is open, and everyone on the web can read it. This blog is used by teachers to set assignments to students and to embed video lectures. Furthermore, students use the blog to post their responses to assignments. At a later stage in the programme, students create group blogs that are also open and available on the web.

As stated above, a focal driver for the use of digital tools has been to open up the educational programme. So far, this has been accomplished in the following ways:

- Assignments from teachers
- Teacher video lectures
- Student assignments and productions
- Communication and discussion

Assignments posted by the teacher are open and available on the web. This makes it possible for people outside the courses to follow the activities of the courses. Also, teachers' academic posts including video lectures on course subject matter are open and available, making it possible for non-students to attain an insight into the themes and content of the educational programme.

Although students write some assignments within Google Docs/Drive, many of the assignments are in the form of open blog posts. Thus, it is possible to follow student activities on the main blog of the educational programme, but also within the student group blogs. Finally, dialogue and discussions between students and teachers have also been made publicly available in the form of comments

within the blog posts. The full-time students make their assignments and comments public under the Creative Commons Licences.

These educational technologies have been implemented to open up as many of the educational activities as possible to the enrolled students, but also with the perspective of opening the programme to a wider audience. So far we have only advertised the programme for full-time students aiming for a master degree, but have allowed access for all interested people to the open online learning environment.

4 Towards a Danish OOC model

Our on-going project is to reorganise the learning environment for the Master programme in ICT-based Educational Design into a series of OOCs (Open On-line Courses) with reduced – if any – teacher support aimed at our second target group (colleagues at other educational institutions – primarily teachers at universities and university colleges, but also teachers at high schools and primary schools, and staff involved with informal learning in museums and/or educational planning in companies) and our third group (potential new students in the Master’s programme for ICT-based Educational Design and people with an interest in the topic).

The intention is that the second target group will follow a track parallel to that of the enrolled students. This parallel track can be termed an “OOC track” for the educational programme. This target group is not enrolled at the University, but will participate voluntarily. To accommodate this target group, first of all, a study guide is developed to guide the students in their course. Since these students cannot avail themselves of teacher help, they need another form of guidance on how to work with the resources and engage in discussions. The OOC track runs parallel to the regular student track and will be built around the same content, activities and assignments. Ideally, the only difference between the two tracks is that regular students will have access to teacher guidance. Thus, the secondary target group will be able to go through the same activities and content as the regular students, but they will not receive an official certificate for their participation. In addition to content and assignments, students in the OOC track will also get access to communication and productions from the enrolled students. The aim is to develop an educational environment including both regular students and students in the OOC track. Potentially, the two groups can benefit from each other by reading each other’s work, providing feedback and engaging in discussions. This is, however, something that should emerge on a voluntary basis. Within the educational programme on ICT-based educational design, there is the possibility of asking second and third semester enrolled students to tutor students in the OOC track. Within the Danish educational system, we believe the “parallel OOC track” is a viable model for opening up education. The idea utilises an existing educational programme or course that has been redesigned in an online format as a stepping-stone for opening up education to a wider audience.

Finally, we wish to address a final, tertiary, target group. This group consists of people that find an interest in the subject area of the educational programme; i.e. educational design. This includes potential future students, former students, and in the case of this specific programme, it could be teachers and educational developers in schools or other institutions. This target group will not necessarily follow the OOC track, but might browse the material and potentially participate in discussions with the aim of getting inspiration and updating their knowledge within the field

5 Conclusions

For the second time the Open Online programme in ICT-based Educational Design for full-time

students has run successfully with a high completion rate. In the fall of 2016 we are ready to advertise the open online learning environment to a wider audience (our second and third target groups) and monitor their learning processes.

The suggested model for opening up education is viable in a Danish context due to university higher education being free in Denmark. The registered full-time students are accepted on the course through a numerous clauses principle and the university is financed from the state according to the ECTS points they passed in their exam. The development of the open online course for full-time students and for the OOC for online learners in the open tracks are financed within the budget of money received from the state.

To open up education through integration of ICT in education is not enough. The use of ICT in education is not just another add-on like the introduction of the photocopying machine and the power point. The introduction of ICT in education is a change parallel to the introduction of print and textbooks! A whole new learning concept has to be developed as personalised learning takes into account the fact that we learn both in formal and informal participatory contexts.

The overall pedagogical philosophy behind the Master's programme in ICT-based Educational Design is a student-centred approach. The focus is on learning activities – how the learners work with the learning material. Back in 2001 Rob Koper (from the Dutch Open University) characterized the learning process: “(...) a lot of learning does not come from knowledge resources at all, but stems from the activities of learners solving problems, interacting with real devices, interacting in their social and work situation. (...) it is the activities of the learners into the learning environment, which are accountable for the learning.” (Koper, 2001 p.3).

In this way OOCs become effective tools for distributing knowledge due to the combination of open educational resources and learning activities, and “teachers and tutors are reinstalled in a position as responsible for organizing the learning process. He or she is choosing relevant learning resources and creating learning activities needed in order to reach defined educational objectives” (Bang, 2006; Bang & Dalsgaard, 2006). At the same time, universities are opening up and distributing their research to the public.

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UNINETTUNO and the MOOCs, Origins, results and new perspectives

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Abstract

While Coursera, edX, Udacity MOOCs initiatives enrolled over 24 millions students, UNINETTUNO is active in studying and providing MOOC models that move steps beyond the behaviorist approach at the basis of the (x)MOOCs currently provided by USA most important players in the MOOC field. This paper shows both UNINETTUNO first approach to MOOCs and results obtained in terms of students moving from MOOCs to enrollment in University courses, and the evolution towards a new MOOC model that takes into consideration most positive aspects of USA-style MOOCs and the results of researches and analysis conducted by UNINETTUNO Rector and her Research team on technologies applied to teaching and learning process specifically for MOOCs.

Keywords

MOOCs, behaviorism, cognitivist approach, autograders, students' expectations analysis

1 Introduction

Since 2011, MOOCs phenomenon is having a disruptive impact on Higher Education institutions and policies. The most updated data available¹⁰ show that over 24 millions students are currently enrolled in USA MOOCs, attending courses provided by the “big 3” in MOOC initiatives: Coursera, originated by Stanford University, edX, launched originally by Harvard and MIT, and Udacity, a for-profit company adopting a business/enterprise oriented approach in curricula definition and provision. UNINETTUNO University started soon to analyze the phenomenon, specifically focusing on psycho-pedagogical approaches, e-learning vision and business models adopted by these initiatives.

First attempt to develop and propose a European MOOC model was realized by EADTU – European Association of Distance Teaching Universities and its members, with the support of the European Commission, through OpenUpEd initiative (<http://www.openuped.eu/>), in 2013.

OpenUpEd platform was designed adopting a different approach if compared to USA-based models. While Coursera, edX and Udacity force to the use of a specific technology for the course provision, underlying a specific didactic approach, OpenUpEd acted – and acts – as a MOOCs’ online marketplace, where students can pick courses provided by different Universities, from different countries, with different teaching/learning models and specific technologies tailored on their specific didactic approach.

¹⁰ Coursera shows a counter on its homepage <https://www.coursera.org/>; edX announced on Twitter they have 5 million students on September, 2015 <https://twitter.com/edxonline/status/631844606964035588>; Sebastian Thrun, CEO of Udacity, in an interview at "The Economist" reported more than 4 million students in September, 2015 <http://www.economist.com/news/technology-quarterly/21662654-sebastian-thrun-pioneer-googles-autonomous-cars-wants-teach-people-how>.
<https://www.edsurge.com/news/2015-09-08-udacity-coursera-and-edx-now-claim-over-24-million-students>

Furthermore, being OpenUpEd members mostly European Universities, OpenUpEd MOOCs offers to their students the opportunity to enrich their MOOC experience with a full academic exam and, consequently, to be acknowledged of ECTS University Credits (Garito, 2015a).

2 UNINETTUNO first approach to MOOCs

UNINETTUNO University enthusiastically participated in OpenUpEd initiatives, becoming the largest course provider in the consortium, opening access to 227 of its courses, part of UNINETTUNO Bachelor degrees curricula, in 4 languages (Italian, English, Arabic, French), in 6 scientific macro-areas: Engineering, Literature, Law, Economics, Psychology, Communication science. UNINETTUNO became also the largest Italian MOOC provider, and a reference point for Italian Universities approaching to MOOCs, as proved by CRUI – Italian Rectors’ Conference – Report about MOOCs (Paleari, Corradini, Perali, Porta, & Breno, 2015).

One of the scientific hypothesis encouraging UNINETTUNO massive participation to OpenUpEd was the need to compare and verify what impact could a different, more complex didactic approach have on MOOCs’ students in regard of USA-style MOOCs.

MOOCs provided by edX, Coursera and Udacity, especially the xMOOCs, are structured in a strictly defined learning path. Complex skills are divided in micro-tasks; Units are provided as a sequence of micro-lectures, lasting 2/4 minutes; each leaning “pill” is followed by “finger exercises” that aim to instantly verify the micro-skill taught, and to provide instant feedback to students, reinforcing successes and suggesting a “try again” action in case of failure of the task completion.

Students have almost no control on their learning process; while the user interface provides links to communication/interaction tools and/or to external resources, the most effective way to attend and succeed in a xMOOC is to strictly follow the learning object sequencing defined with a top-down design.

This classical behaviorist approach (Lowyck, 2013; Morrison, 2013) is completely different from UNINETTUNO didactic model and psycho-pedagogic approach, developed by UNINETTUNO Rector Prof. Garito and her research team through more than 20 years of applied research focused on technologies and teaching/learning processes. UNINETTUNO psycho-pedagogical model is based on cognitivist theories, aiming to impact not only and not mainly on visible behaviors of students, but on cognitive schema and models, and to provide a complex learning experience with a long-term effect on students’ memory and skills (Garito, 2013).

2.1 UNINETTUNO’s MOOCs model

UNINETTUNO’s MOOCs are provided using the same technologies provided to students enrolled in UNINETTUNO bachelor and master degree programs. Videolectures designed using the video-communication model developed by Garito and her research team starting from 1992 (Garito, 2015b), are the core component of the didactic model, and have specific characteristics:

1. **Contents’ modularity**, allowing each student to access the course accordingly to his/her knowledge and competence level;
2. **Topics indexing**, fostering hypertextual learning; videolectures indexing acts as a cognitive map, suggesting to students different learning paths;
3. **Bookmarks**, graphic symbols showing up when a specific content related to what the professor is talking about in that very specific moment of the lecture exists; bookmarks, showing up while the videolecture is playing, suggest an hypermedial learning path to students, linking to:

- a. **Practical exercises and virtual laboratories**, integrating theoretical knowledge with the practical experimentation of newly acquired skills, through a *learning by doing* model;
- b. The **Digital Library**, where students can find deepening materials (essays, papers, text materials, multimedia, web references, bibliographies) hypertextually linked to each topic of each lecture of the course (Garito, 2015b)

2.2 Results

One of the more frequently reported criticism on USA MOOCs is about the completion rate (or, as opposite, the drop-out rates). MOOCs can reach 250.000 students enrolled, with an average of 25.000 (<http://www.katyjordan.com/MOOCproject.html>); but completion rates are low. Times Higher Education reported in 2013 the analysis of the, at that time, doctoral student Katy Jordan (Parr, 2013); automatically assessed MOOC showed a 7% on students really completing their course, dropping at 4.8% when analyzing peer-reviewed assessed MOOCs.

Jordan's research became an online tool providing updated data about MOOC completion. Filtering only the courses provided by edX, Coursera and Udacity, available on the MOOCproject tool and marked as "completed", completion data are low also in 2015. They range from 1.7% to 16%. Also selecting autograding assessment-only courses, the completion rate ranges from 2.8 to 11.8% (Programming Fundamental), with 4 of the 5 courses between 2.8% and 4.8%.

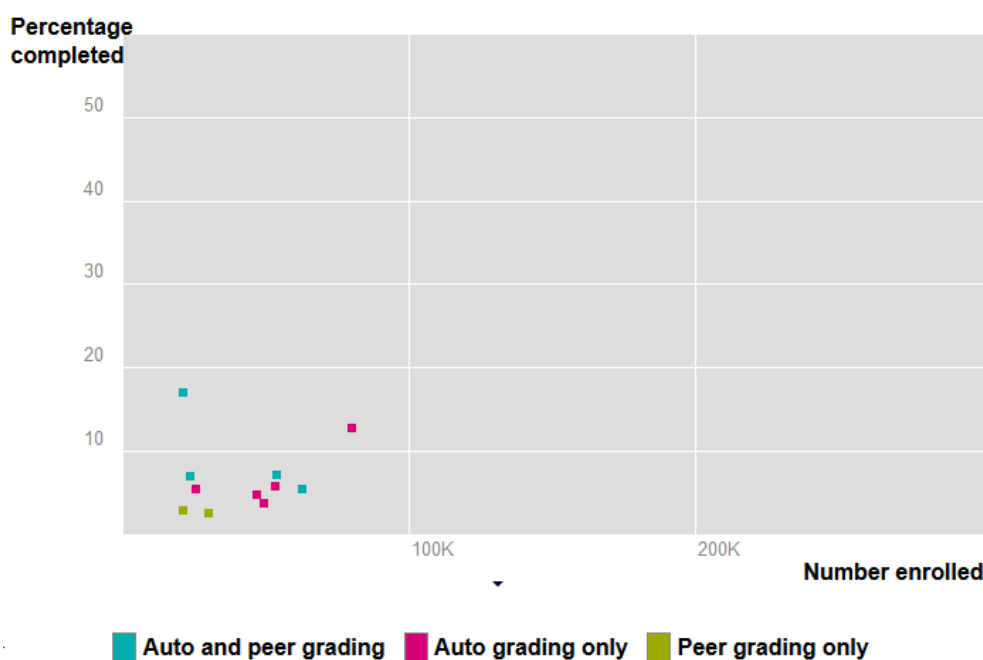


Figure 1: Completion rates / Enrolled students for Udacity, edX and Coursera selected MOOCs (<http://www.katyjordan.com/MOOCproject.html>)

Both drop-out rates and completion rates are figures that stand on the "open access" scenario, also if USA-style MOOC provision is less and less "open", adopting *freemium* models and paywalls.

UNINETTUNO decided to measure its MOOCs performances not on completion, but raising its ambition: verifying the conversion rates, that is counting students that not only completed a MOOC, but decided to enroll to a full University course.

Results are impressive. UNINETTUNO MOOCs students come from 119 different countries, with a high percentage of students coming from Italy, Spain, India, United States, Portugal, Brasil, France. 2.12% of UNINETTUNO MOOCs students decide to enroll to UNINETTUNO course, becoming students of a full University course, both on Single courses, Bachelor/Master Degrees or University master programs. (UNINETTUNO Statistic office, 2015)

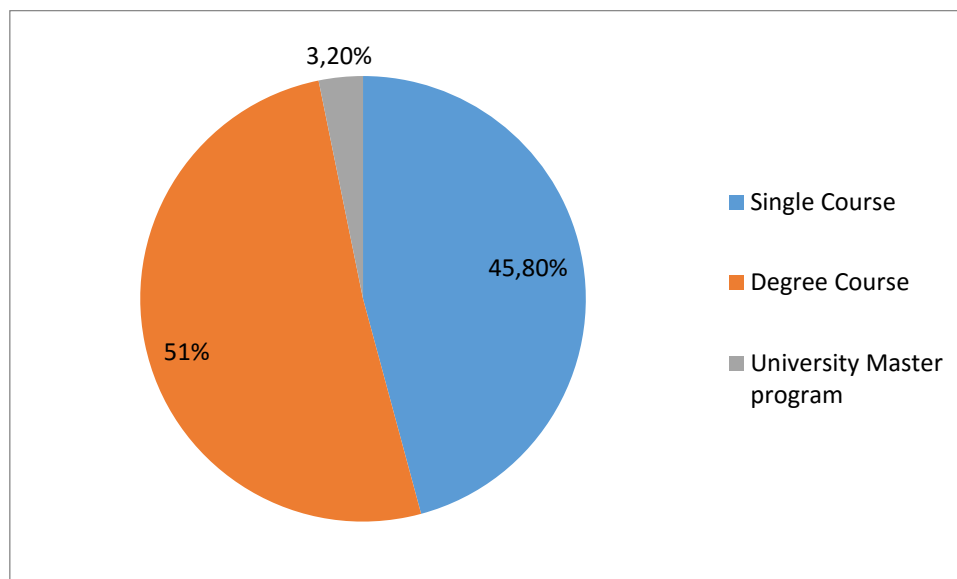


Figure 2: Distribution of students enrolled after a UNINETTUNO MOOC course completion

3 UNINETTUNO MOOCs Model Evolution

UNINETTUNO analysis on USA-style MOOCs revealed several critical aspects on them; specifically:

1. the lack of a clear video communication model, designed for higher-education level lectures;
2. issues on pre-requisites definition and pre-enrollment orientation;
3. full-online final evaluation and use of peer review as *in itinere* assessment;
4. a weak psycho-pedagogical approach, prevalently based on a behaviorist pattern;
5. the lack of student control over his/her learning path and process. (Garito, 2015a)

Furthermore, some aspects of edX, Udacity and Coursera MOOCs are technologically and pedagogically interesting; as the success of UNINETTUNO MOOC initiative fosters further evolution on the adopted model, UNINETTUNO idea is to evolve its model using the effective component coming from USA MOOCs experience. Autograders, that provides instant feedback to students when they answer a question or resolve a complex exercise, are surely a useful technology if integrated in a differently designed pedagogical context. The hands-on approach used in technical/scientific xMOOCs finger exercises and final sessions leads to an effective *learning by doing* model to be integrated in a course (Caforio & Garito, 2014).

Taking into consideration the results of completed and ongoing researches and analysis, and UNINETTUNO psycho-pedagogic model principles, UNINETTUNO developed and will soon launch its new MOOC model.

The new model main aspect will be:

1. **Videolectures**, full-length lectures, not divided in micro-pills, lasting about 40 minutes as in UNINETTUNO model, **modular**, **indexed** and with **bookmarks** linked to deepening materials (text, essays, papers, web references, multimedia, slideshow) as described above;

2. **Autograder exercises**, linked to lecture's topics, providing:
 - instant feedback to students;
 - the possibility to view in real time the correct solution/development of the problem, provided by the Professor itself in an on-demand video
3. **Student's control** over their learning process.

"Standard" xMOOCs can be represented in a linear way; using the sequencing bar of a typical Udacity MOOC, representing a Unit of a MOOC course, we can easily understand the course delivery phase structure:



Figure 3: a Udacity MOOC progress-sequencing bar

Each grey square is a micro-unit, lasting a few minutes; each bullet point is a finger exercise. The learning path is strict, and students are driven to follow the route traced by the professors and the instructional designers.

As already said, UNINETTUNO model has a cognitivist approach; the model allows not only to make the whole process more flexible, but also to trigger new processes of interactive, multimedia and hypertextual learning, which can enhance the long-term memory using different registers such as text, sound and images to enhance the cognitive abilities of the student (Garito, 2015b).

The concrete implementation of UNINETTUNO model in MOOC cannot be represented in a linear way, either considering only one lecture.

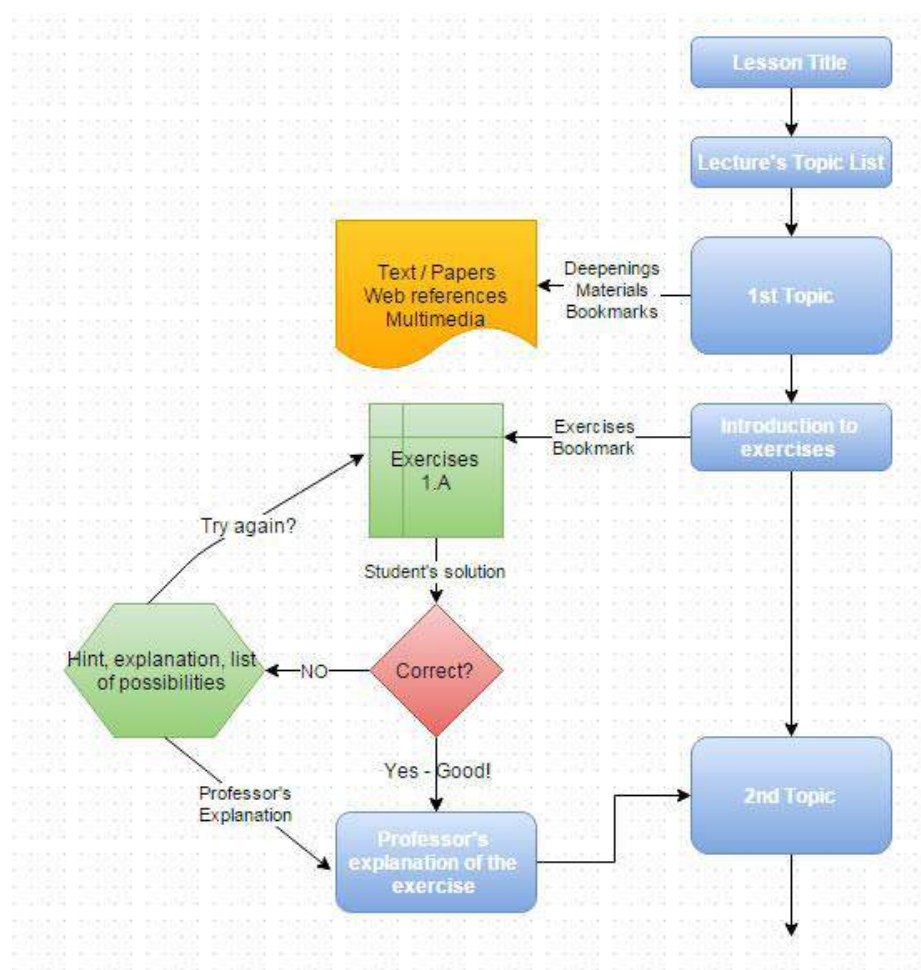


Figure 4: possible learning paths during a UNINETTUNO MOOCs video lecture

This model offer to students a learning environment that stimulates a process of exploration and discovery, a tool for "learning to learn", to develop new learning strategies, and improve cognitive processing.

The customization of the learning paths also determines the possibility of an incremental access, from the student, at different levels of knowledge. In this sense, "hypertext learning" can be considered a flexible process as it respects the different learning styles and allows for a targeted use according to the prerequisites and the students' prior knowledge.

4 Conclusions

UNINETTUNO is still involved in research and analysis on MOOC models, recently launching an analysis focusing - also - on students opinions and approach about MOOCs. The questionnaire, defined by UNINETTUNO Psychology Faculty, includes 23 items, addressing 4 areas:

1. students' personal data and previous MOOC/University experiences;
2. Students' expectations before attending a MOOC
3. MOOC course completion
4. Students' opinion after MOOC completion

Expectations and opinions are items structured through Likert scales (five steps, from "strongly agree" to "strongly disagree"). The questionnaire was prepared using Google Form and Google Datasheets for questionnaire distribution and data storage. Data collection started in October 2015

and ended at the end of November 2015. About 500 UNINETTUNO students, from all Faculties and sampled to include different ages, University careers, nationalities, were contacted and answered to the questionnaire, providing relevant insights.

While other relevant data collected by this survey, and regarding also students' opinion after a MOOC completion, are still being analyzed, it is clear that students' expectations on MOOCs are high, and are specifically focused on two dimensions: **innovation in methodologies and flexibility in attending the courses**. The following figure represents students' expectations before enrolling to a MOOC:

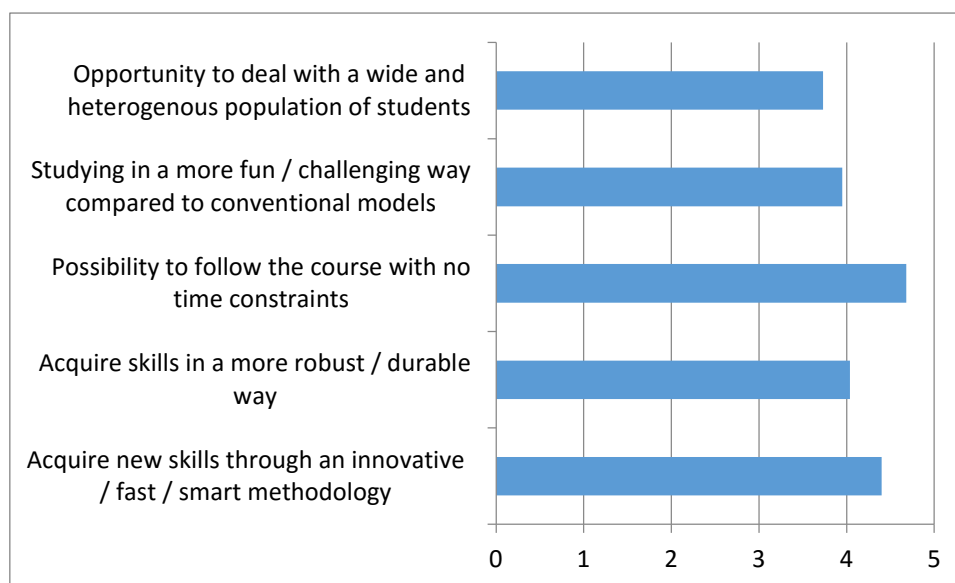


Figure 5: Students' expectations before enrolling to a MOOC

UNINETTUNO new MOOC model aims to address the needs emerging by students' expectations in term of flexibility and innovation in methodologies, coherently with the cognitivist framework UNINETTUNO adopted in all its researches and developments of technologies applied to teaching and learning processes.

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MOOC as Transmedia Storytelling

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Abstract

MOOCs are hailed as the solution to many educational problems. Yet teachers are not eager to embed MOOCs in their teaching practice. High drop-out rates are often used to explain why MOOCs are not advocated as learning tools by teachers in brick-and-mortar classes.

In this research we use design thinking to explore MOOC engagement. First we tap into teacher's conversations on MOOCs. Next we define MOOCs through four European funded projects. Each project develops Open Educational Resources introducing a new didactic tool. In the third phase we introduce transmedia storytelling as a way of engaging learners. Finally we make a case for MOOCs as transmedia storytelling.

Both MOOCs and transmedia storytelling convey content over different platforms but unlike MOOCs transmedia storytellers have adopted a strategy of sensory engagement to keep their audience captivated.

Keywords

MOOC format, engagement, transmedia storytelling

1 European Projects as Innovators

High drop-out rates are often used as a disqualifier for MOOCs as educational tools. We therefore use design thinking to move from this problem to a solution which turned out to be engagement through transmedia storytelling.

Design thinking moves from observation and definition to understand the problem to ideation and prototyping to create the solution. In order to understand define the problem we connected to four European projects developing new ways of teaching.

TALES (2013-2015) is a Comenius project exploring oral and digital storytelling as a didactic tool. Professional storytellers, a storytelling castle and teacher training departments discuss how teachers in secondary education and in teacher training education can use storytelling to enhance their learners' competences of the 21st century. A manual, good practices, pilot cases and workshops are the intellectual outputs.

Guerilla Literacy Learners (GuLL) develops a MOOC for teachers who want to learn more about their students' Guerilla patterns. GuLL (2014-2016) is an Erasmus+ project traveling from content- and teacher-driven approaches to learner-generated, multimedia knowledge clips.

Another Erasmus+ project, Liminality & Educational Entrepreneurship (L33n), creates an entrepreneurial environment supporting entrepreneurial clubs to think up their future. L33n (2015-2017) links good practices, to liminal labs and learning snacks. Liminal labs teach learners how to experiment creating „in betwixt and between“ contexts (Turner, 1969). Learners first disconnect from old habits and then connect to feasibility plans in the third phase. L33n combines these good

practices and these liminal labs to create short instructive knowledge clips showing how to implement an entrepreneurial mindset throughout the curriculum.

In the fourth project, Learning-to-Learn-by-Teaching2 (L2LByTe2), adult students are coached to explore how they learn best. In L2LByTe2 (2015-2017) students become teachers creating knowledge clips for their fellow learners on adult literacy.

These projects are all examples of open education. They all invite teachers to step out of their bricks-and-mortar classrooms, to embrace multimedia, to open their learning resources to European students and to rethink the definition of teaching and the role of teachers and learners.

2 MOOC Conversations

Before defining MOOCs we tapped into the MOOC conversation: what do teachers say about the possibilities of MOOCs? And here are some answers. MOOCs are used to attract more students, allow students to study in different ways, give teachers the opportunity to expand their teaching repertoire and to innovate the curriculum.

Although MOOCs are designed as virtual learning environments, teachers have appropriated MOOCs as textbook, as knowledge clips for their flipped classes, as remedial course. They use a whole MOOC, take one episode or combine episodes out of different MOOCs to create their own course.

MOOCs challenge teachers and students mediawise. As design thinkers we organise conversations with them. These conversations have taught us that for teachers websites are less scary than YouTube channels, learning snacks are more acceptable than open educational resources and an e-manual is definitely less daunting than a MOOC. Facebook, Twitter, snapchat, Instagram are more popular amongst students although they are not necessarily eager to use them for educational purposes. Blogs are the big unknown as reading or 'lurking' is still more popular than posting or publishing.

3 MOOC Definition

We connect the four European projects to the definition of MOOCs as designed by Home, OpenupEd and ECO:

MOOCs are courses designed for large numbers of participants, that can be accessed by anyone anywhere as long as they have an internet connection, are open to everyone without entry qualifications, and offer a full/complete course experience online for free.

TALES, Gull and I33n have a project website whereas L2LbyTe2 has its own YouTube channel. For each project 150 learners or more are possible without additional staff. Anybody with an internet connection can access them anytime, anywhere and at their own place. There are no entry qualifications and no costs for learners to participate. They offer complete courses with educational content such as texts, videos, social media. L2LbyTe2 is the only project without texts. Interaction is organised through facebook groups and pages. I33n and GuLL also invite their learners to blog. TALES demonstrates how tasks and activities can be done but does not allow learners to upload their artefacts. No feedback is given. However, once a year they organise an international class and students can upload their stories in the facebook group. These students do get feedback. They are also tested and they get an international certificate. GuLL, I33n and L2LbyTe2 issue non-formal open badges. These learners obtain feedback when the GuLL MOOC is running. I33n creates a feedback loop for the physical entrepreneurship clubs and peer feedback is given when the L2LbyTe2

knowledge clips are published on YouTube. With the exception of the latter one, they all publish an e-manual.

Although the differences are minimal we “sell” TALEs as a website; l33N as learning snacks and L2LByTe2 as knowledge clips on a YouTube channel.

4 Transmedia Storytelling

There are also quite a few similarities between transmedia storytelling and MOOCs. And as we have referred to innovative European projects, we look at the features to define an iMOOCs characterised by individual responsibility, interaction, interpersonal relationships, innovation and inclusion (Teixeira & Mota, 2012). The characteristics of future storyworlds (Pratten, 2015) could be linked to iMOOCs: “pervasive” or learner-centered, “persistent” or activity-based learning; “participatory” or community-supportive, “personalized” or PLE, “inclusive” or open, “cloud-based” or small team of implementors and “connected” or telling a story across different platforms.

But transmedia storytelling also offers some focal points to MOOC creators. MOOCs could implement storytelling as facilitator of deep learning (Barrett, 2005) thus increasing its success as for short online courses deep learning is vital to its success (Vihavainen, Luukkainen and Kurhila, 2012).

Secondly MOOCs could adopt the interrelatedness of the media where multiplatform refers to the sum and transmedia aims at becoming “more than the sum of parts”, moving from one platform to another heightening the audience enjoyment (Pratten, 2015, p.16). This movement from one platform to another also allows “the story to be contextual such as integrating current weather conditions, tides, air quality and such like” (Pratten, 2015, p.11).

Audience engagement can be linked to the call for open education pedagogies, “innovative pedagogical models, that respect, empower and emancipate learners as co-producers” (Teixeira & Mota, 2013). These learners had been called the “unknown learner” (Brabon, 2014) although they now are discovered to study for pleasure, or for work and educational purposes who study alone or in group (Wintrup et al., 2015).

5 Sensory Engagement

To keep the audience connected transmedia storytelling increases engagement in three stages: Discovery, Experience and Exploration. Each media has those three stages but each platform can also act as Discovery content for another media like some books can lead to their film adaptation.

Pratten uses the metaphor of sensory engagement to explain how transmedia storytelling increases the connection between content and audience. First you create teasers. As people as a rule do not like new content they have to have the opportunity to sniff it. He links smell to teasers who provide “all content that can be digested with the minimal amount of attention” (Pratten, 2015, p.139). The audience wonder whether it is worth their time. Next transmedia storytellers have to provide a trailer that removes the barriers between the unknown and known and which allows the audience to taste the new information and decide whether they like it. Smell and taste belong to the discovery phase.

Then the audience are invited to experience the new content: they touch and see it. They can decide whether they are in and if they can see it for what it is.

Listen introduces the Exploration phase. The content in this phase is participation and collaboration. “Am I alone? I want more. I want to help” are the questions the audience are concerned with. Pratten defines this content as follows:

“Participation might be passive (reading additional content and exploring the world) or active – voting, sharing, commenting, discussing, Tweeting and so on. Collaboration is adding to the storyworld: writing fan fiction, creating videos or illustrations. It’s providing new content that you, as author, are free to embrace or reject” (Pratten, 2015, p.143).

6 MOOC as Transmedia Storytelling

Through comparing the open educational resources created in four European projects with the definition of MOOCs as co-developed by HOME, OpenupEd and ECO, we question the concept of MOOCs. Is a MOOC a new approach and if so, what defines its novelty?

Secondly as teachers and learners are already familiar with the four characteristics of MOOCs, why don’t they implement them in their teaching practice and why do they drop out so numerously? They have already experienced learning in massive open educational resources which can be accessed anytime, anywhere and at any pace. They have already learnt from free online courses, interacted in social media and obtained non-formal certificates and open badges,

We discovered three possible explanations. MOOCs lack a final connection, a final interaction and a final audience engagement.

We propose to tackle these shortages through transmedia storytelling. The final connection could be contextualising the MOOC in physical learning environments rather than the weather. Transmedia storytelling also shows how to create this final interaction. In creating a storyworld in which the audience seamlessly travel from one media to another, a fourth interaction to the learner-content, learner-instructor and learner-learner interaction (Moore, 1989) is added: media-media interaction. This media-media interaction plays a vital role in increasing audience engagement. Every media has its specific content and learning objective and is organised from Discovery, Experience to Exploration to increase engagement. The more media the learner visits the more connected his learning trajectory becomes. Every MOOC starts with a teaser and trailer to discover the content. Then it offers knowledge clips, quizzes and further reading to experience it. Finally we move to the exploration phase where we ask learners to participate adding some resources or commenting on and discuss some questions. Only the top learners become collaborators adding new content.

It is our hypothesis that drop-out rates will decrease if learners were allowed to sniff, taste, touch, see and hear the content creating a gradually increasing immersion. Secondly teachers may implement MOOCs more readily if they were to know how they can launch the transmedia MOOC in providing the final connection to the physical learning environment. Thus teachers as MOOC connectors or transmedia storytellers within the MOOC if they create the MOOC, allow learners to experience “transmedia storytelling as an audience journey going from “wow” moment to “wow” moment” (Patten, 2015, p.147).

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OpenQuest: Designing a Motivational Framework for MOOCs Instruction

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Abstract

This paper introduces an innovative motivational framework for Massive Open Online Courses (MOOCs) instructional design coined as Open Quest Framework (OpenQuest). OpenQuest aims to improve learning and user engagement in MOOCs by drawing lessons from the success of quest-based initiatives, gamified web platforms, and massive-multiplayer online games (MMOs). The framework is grounded on established motivational theories such as the Self-Determination Theory and Situated Motivational Affordance. It supplements existing MOOCs design schemes that usually focus on pedagogy, assessment and technology.

It features specific motivational mechanisms including, quests and narration, reputation systems, progression mechanisms, multiple learning pathways, well-designed feedback and social elements, that can be used to enhance learners' engagement and personalize learning.

Keywords

MOOC, gamification, motivation, pedagogy, learning

1 Introduction

This paper proposes in brief a new theoretical motivational framework which describes how game elements can benefit MOOC instructional design by enhancing learners' engagement. It builds upon the work of design frameworks that outline the pedagogical and technical aspects of MOOCs design such as MOOC canvas (Alario-Hoyos et al., 2014) and Mazaro's taxonomy design framework. The aim is to present the first, theoretically-driven, motivational framework on MOOCs design, called OpenQuest. Specifically, it reviews a number of motivational theories and their applicability to the case of MOOCs design, it analyses literature on quest-based learning, gamified web-platforms and multi-user games to provide evidence-based recommendations on how specific game mechanisms can work motivationally in the case of MOOCs.

2. Theoretical background

The proposed framework tackles the need for motivating learners towards MOOC completion by considering learners' initial motives for participation and the reasons justifying their exit from a MOOC. OpenQuest extends suggestions to add motivational design elements to existing design frameworks (Mystakidis & Berki, 2014) and is grounded on the following motivational theories. Self-determination theory postulates that intrinsically motivating actions can be enacted in environments that exhibit choices, direct feedback, optimal challenges, self-directed interaction and social connectedness (Ryan, Rigby, & Przybylski, 2006). The theory of Situated Motivational Affordance (Deterding, 2011) stresses the need for a meaningful integration of game elements in a system, including understanding users (expectations, skills) and the organizational context of learning (e.g., CPDs acquisition, curiosity), if it is to work motivationally. Flow theory is a 'classic' approach for designing optimal learning experiences. To become absorbed in an activity requires a match between

a person's capabilities and level of difficulty (Csikszentmihalyi, 1990). Learning should be flexible for learners to customize and self-direct it based on their own learning needs. Overall, the centre of the proposed framework is the learner; user-centred design is proposed as the key to a meaningful MOOCs motivational design.

3. A motivational framework for MOOC instructional design

OpenQuest consists of gaming and social mechanisms emerging from either the previously discussed theories or online applications that successfully engaged users. Following we present the five first elements of the OpenQuest framework: (1) Delivering the content of a MOOC in the form of quests where learning comes out as a natural characteristic of play are found effective in terms of learning performance, persistence and engagement in initiatives such as the Quest to Learn¹¹ and the 3D GameLab¹². Quests can be arranged in the form of a story/narration where learners' responses contribute to the story's progression. (2) Reputation systems provide rewards to learners. For example, badges, social and scientific scores contributed to iSpot's creation and maintenance of a large community of users (Clow, 2013). (3) Adaptable leaderboards increased behavioural change towards social and business objectives (Abadi, H. K. Mandayam, C., Yue, J. S., Zhu, C., Merugu, D., Prabhakar, 2014). Contrasting learner's performance to meaningfully-related others (e.g., teammates) increases intrinsic motivation. (4) Collaborative mechanisms are the motivational cornerstone of successful multi-user games explaining persistence in gaming (Herodotou, Kambouri, & Winters, 2014). Course participation can be enhanced by performance responsibility towards peers in team coursework. (5) Well-designed feedback through timed triggers and unexpected rewards can reinforce learners' participation (Fogg, 2009). Further recommendations and components for a MOOC motivational framework can be developed by considering gamification elements from the user experience and interface design (Kalogeraki, 2016).

4. OpenQuest Learning Path

OpenQuest proposes the creation of personalized learning paths through a series of processes relying on users' profiles and learning analytics (figure 1). More specific, the initial screening of users' profile including their expectations, skills, motivation and preferences will determine the best suited learning activity (entry level quest). Each level features alternative quests based on different learning approaches (Laurillard, 2002) that map to learners' interaction preferences (Bartle, 1996). Based on their performance, OpenQuest will propose the completion of additional quests in the same level or the optimal quest in the next level. Levels increase in complexity and difficulty corresponding to the course's progress towards the achievement of the set learning objectives matching user skills with learning challenges (Csikszentmihalyi, 1990). Additional mechanisms such as adaptive leaderboards related to a given quest and overall performance provide additional motivation for learning.

¹¹ <http://mitpress.mit.edu/books/quest-learn>

¹² http://works.bepress.com/chris_haskell/19/

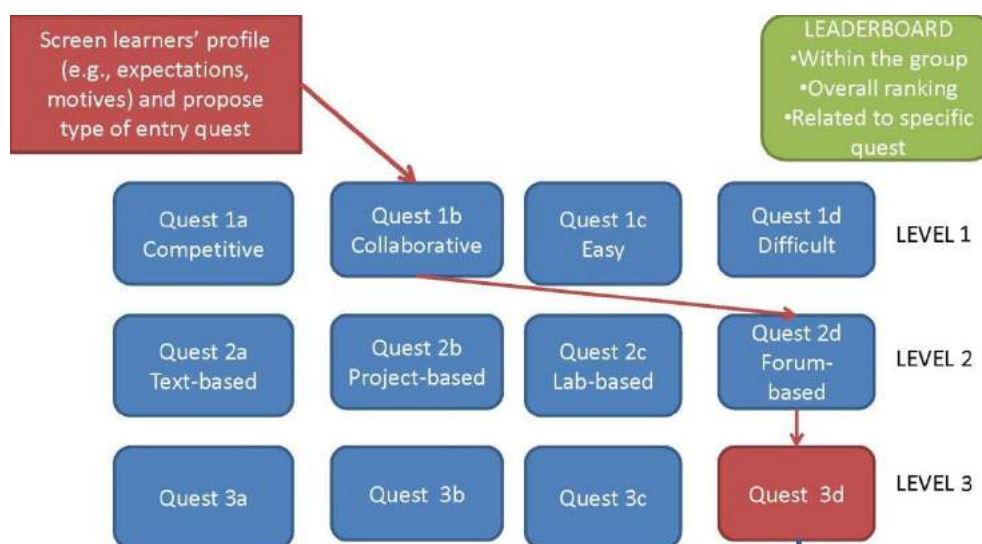


Figure 10 OpenQuest Learning Path

5. Challenges

OpenQuest adds an additional sophistication layer in MOOC design. This complexity can be addressed by incorporating existing applications into the existing MOOC virtual learning environments and platforms, e.g. in the form of plugins and APIs. Second, we propose an iterative process of design starting with a simple version of the learning environment with only basic characteristics such as two different pathways of learning. After the assessment of its learning effectiveness and usability, we will improve the design accordingly and then add more elements to ensure that the design will be appealing and engaging and enable us to determine the effectiveness of each of the proposed elements.

6. Conclusion

MOOC design is currently focused on cognitive and technical aspects of learning. With the aim to transform learning in a MOOC from an isolated solitary task into a social, enjoyable experience and engage massive numbers of learners, we propose a motivational approach that monitors and rewards learning and embraces learning flexibility, personalization and self-directed learning. Despite the benefits of adding game elements in learning environments, we recognize that gamification techniques might have certain limitations and points of criticism. These points include the control and power opposed to learners by the designers and the normalization of behaviour when people have to play by the rules to learn (Kopeć & Pacewicz, 2015). This might limit the autonomy and agency of learners to negotiate and creatively engaged with content.

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The Research Results on Pedagogical Approach in MOOCs: Lithuanian Case

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Abstract

Appropriate and competent use of ICT improves the education system and pedagogical approaches by creating new learning methods. Due to these changes, Kaunas University of technology (KTU), created the first massive open online course (MOOC) in Lithuania in 2014. For this MOOC course, the Moodle learning management system was used. The aim of the paper is to present the research results on the pedagogical and technological approach in the Lithuanian's first MOOC.

Keywords

MOOCs, pedagogical approach, MOOCs disadvantages

1 Pedagogical Approach

Education should be adapted according to ICT changes in a fast moving world (Bruff, Fisher, McEwen, Smith, 2013). Modern economy encourages global competition and education should not be limited to a traditional school environment (Hayes, 2005). The popularity of ICT change how people communicate, find information and gain knowledge (Higgins, 2003). The ability to teach with technology is quite different from the ability to use it, because technology is integrated with a sound pedagogical framework (Ross, Sinclair, Knox, Bayne, Macleod, 2014). What is more, education is going through big changes. Education continues to be debated, and not only by philosophers, but also by laypersons, and through the mass media, including newspapers, television and radio (Pedersen, Liu, 2003). Also, the main theoretical view is changing very fast: teacher-centered approach has been moving into student-centered approach, where students are responsible for finding things that they can use to create knowledge and "Things" are tools, to help students engage in a kind of meaning making that is active.

Yuan L. and Powell, S. (2013), Bates, T. (2013), Jansen D. and Sepe R. (2015) and others (Yuen, Law, Wong (2003); Brandl (2002); Thompson (2013)) are identifying MOOC as a massive open online course and an online course aimed at unlimited participation and open access via web. In addition to traditional course materials such as videos, readings, and problem sets, MOOCs provide interactive user forums that help building a community for students, professors, and teaching assistants (Yuen, Law, Wong, 2003).

MOOCs traditions are not deep in Lithuania. For this reason, the first Lithuanian MOOC "Information Technology" was based on social constructionist model. This model is based on understanding through socializing (Thompson, 2013). That creates the strong connections between learners as a group members (learners help each other). The share of knowledge help to supplement the learning material with practical samples and gives deeper insights for learners who has no experience in the topic.

2 Research methodology

The first massive open online course “Information technologies” in Lithuania designed in the Lithuanian national language at KTU was a big challenge for designers and teachers. With the use of questionnaires, we were always checking the quality and the satisfaction of the participants with the methods of course delivery and communication (Deboer, 2002).

The aim of the research was to identify the learning quality of MOOC. To gain the data the anonymous questionnaire was ready for that purpose. The research questionnaire provided to the MOOC participants contained 22 questions about the quality of learning course material, learning method and course administration. The key questions were about the quality of the learning material (Is the learning content relevant to the course?; Is the learning content adapted to the learner?; etc.) and quality of MOOC in comparison with other learning methods (How would you evaluate each of learning methods used in MOOC?; What are the benefits of MOOC?). 170 respondent participated in the research.

3 Opportunities of MOOCs

To identify how respondents evaluate the MOOC, they were asked to fill the questionnaire and express their opinion. First part of questionnaire was designed to identify the elements which make the biggest influence on choosing MOOC as a learning method and it's comparison with other learning methods. The comparison was due to find out if MOOC learning method is effective.

Speaking about the motivation, one of the important aspects was the possibility to receive high-quality course material for free, which helped to participate in MOOCs. 66% of respondents evaluated this question part by the highest mark, i.e. 5. 4 points were given by 19% of respondents, 11% participants evaluated it by giving 3 points, 2 points were given by 3% and 1 point was given by 1% of respondents.

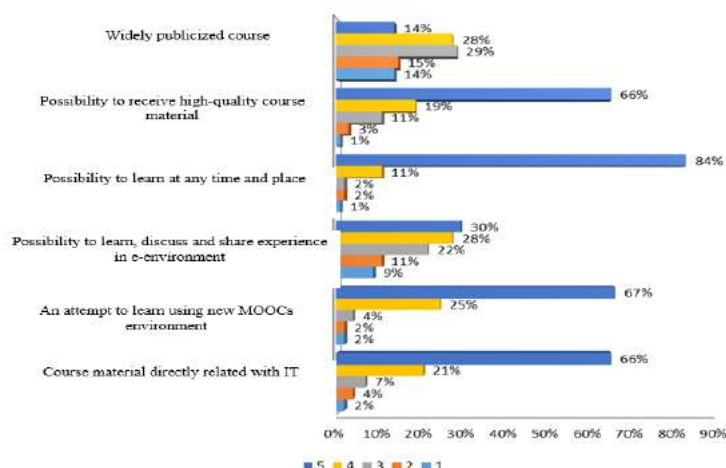


Figure 1: Motives helping to choose MOOC „Information Technologies”.

From all models such as MOOCs, E-learning environment method, mixed learning and traditional learning, MOOC has the best evaluation. In order to get the best understanding about learning methods, respondents were asked to evaluate all of them using the Likert's scale, from 1 to 5 (see fig.2).

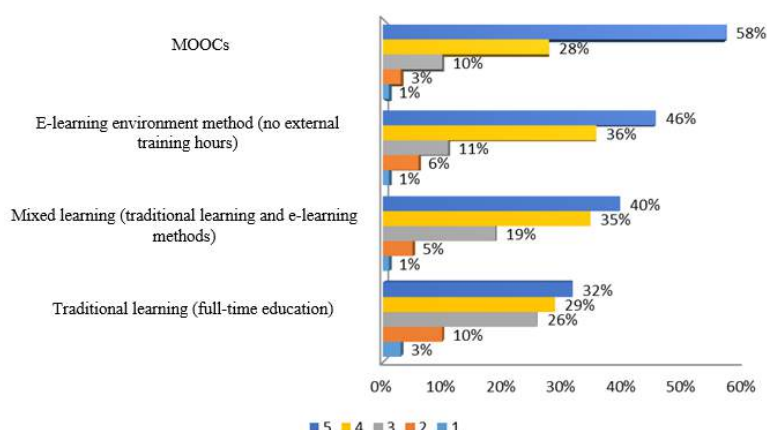


Figure 2: Participants feedback on the pedagogical approach.

4 Disadvantages

The course in Lithuanian language organized for the first time in 2014. For this reason, the investigation held to reveal the opinion of learners about this type of learning courses in order to see what could be improved or changed. In total, 2009 participants took part in the course from which, 300 learners successfully completed the course. All respondents who finished the course were awarded with certificates. The majority of respondents who participated in the MOOC titled “Information Technologies” course fell into the age group between 26 to 60 years. After the analysis of the questionnaire, it became clear that the majority of learners who completed questionnaire are in the age category of 26 – 60 years old (92% of all respondents). The youngest group comprised the 1% of all respondents who are younger than 18 years old. 18 – 25 age group included 4% of all respondents. The oldest group which included people 61 years and more had 3% of all respondents. Such distribution shows a huge interest of youngsters and middle-aged people in information technologies. It only confirms that this group is interested in new technologies, although the lack of theoretical and practical knowledge is clearly seen (Deboer, 2002). It is indicated that some disadvantages raised for the age of respondents as older respondents had some troubles with using environment and communication tools.

Comparing MOOCs with traditional courses, some disadvantages can be clearly seen (Yuan, Powell, 2013). In order to reveal the real situation and see the difference between the two different methods, respondents were asked to disclose and evaluate these learning methods.

The results show that MOOCs have several key. The results revealed that main disadvantages of learning method of MOOC is about the lack of communication, indifferent learning material and some technical issues (see table 1).

Table 1: MOOCs disadvantages in comparison with traditional learning methods

Category	Sub-category	Example
No disadvantages (38)		I don't see any drawbacks; I haven't noticed any major disadvantages; there are no disadvantages, only advantages.
Disadvantages	Personal qualities (1)	Self-discipline.
	Communication (30)	No direct communication with lecturer; sometimes you have to wait

	longer for the answer to the question of find out by yourself. In traditional learning you get the answer immediately.
Evaluation system (3)	Website evaluation system seemed like inadequate, because every person evaluated it according to different criteria.
Learning organization (6)	Lack of differentiation; I do not see any huge disadvantages, only some organizational issues (the promised end date of course no latest than 18 December).
Learning material (14)	A lot of material and little time to absorb all new information; course tasks are not directly related with course content.
Certificates (5)	A bit pricy (15 EUR).
Technical characteristics (8)	Due to a huge number of participants sometimes it is hard to sign in for everyone at the same time and upload documents in the same website.

5 Conclusions

MOOCs provides many opportunities for learners. The opportunities such as the independency from time and place, the high-level learning material, etc. opens the new learning opportunities to the learners and encourage them to use more flexible way to gain knowledge and experience. Also, MOOCs opens the ability to gain university level education and experience. That encourage learners to choose MOOC and be active learners in it.

Participants' answers in the research show us that the first MOOC, which was created in Lithuania was well prepared. The main disadvantage was communication, because students were missing the fast answer to their questions. Other disadvantages were lack of time to absorb information and some technical difficulties. It is useful to see research results and learn from this experience, so the future MOOCs will be even more professional. Finally, it is seen, that Lithuania society is ready to learn via MOOCs and they are deeply interested to use it as a new way of learning.

Further steps for Lithuanian MOOCs could be the increased number of MOOCs in Lithuanian and more institutions joined into the process of MOOC delivery. It is expected that this first MOOC in Lithuanian will encourage other institutions to learn from our experience and design their own MOOCs.

6 Recommendations

There are several key recommendations for providing MOOCs for the first time:

1. The ways of communication must be rethought. The proper communication between learners and teacher is a key to the satisfaction of the learners and the success of MOOC. So, the communication methods must be designed well and thought of few different ways for communication.
2. It is important to think about differential learning content. The participants of MOOCs usually have very different experience on the topic of course and different educational degree what cause the different ways of thinking and information interpretation. So, it is extremely important to make multilayer learning content which would be interesting to all the participants: from the newbie to the professionals.
3. The technical capacity must be adapted for the large number of participants. Before designing the MOOC it is important to think of the possible number of participants and design the technical capacities for that number in case to avoid the systems downs.

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A summer-day's MOOC

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Abstract

This paper examines the strengths and limitations of blending MOOC's with short-term international experiences (STIE) in higher Education. Analysing case studies of short-term faculty-led international experiences in Romania, Georgia, and the Netherlands, it reports on the process of trying to internationalise the non-mobile student in Higher Education, and to offer a distance MOOC-situated learning alternative for overseas students partaking in selected STIE programmes. The findings may have practicable implications for those who are involved in considering a similar blend of short-term international experiences programmes with open online courses.

Keywords

Summer school, STIE, short-term international experience,

1 Internationalisation

MOOC's are forcing a re-conceptualisation of higher education policies. Having an embedded institutional internationalisation policy is a regular occurrence these days. Or in the words of Jane Knight: "Internationalisation is definitely past the new flavour of the month stage". And indeed after the launching of the Bologna process a commanding amount of European students have been able to study in other member states. But as Jo Ritzen stated "Europe could do better". Among other things, Ritzen observes that: "Innovations in learning methods which substantially enhance learning quality and efficiency are rare. Education should be geared towards (...) a global labour market and having the potential to enhance cultural awareness among students".

1.1 Globalisation

The globalisation of our societies and economies creates new realities and challenges. Put another way: "Internationalisation is changing the world of higher education, and globalisation is changing the world of internationalisation". The emergence of the knowledge economy has lead to new jobs for new skills. To educate students solely from a domestic point of view, equals to depriving them of a competitive advantage for this interconnected world. Does not it make sense that also the majority of non-mobile students benefit from international and intercultural experiences? If these can be interwoven in existing semesters, HEi's at least live up to their ambition of preparing the student for tomorrow's world.

2 The four seasons

Short-term international field study is an attractive alternative for many students to traditional, longer-term study abroad programmes. The part-time academy's main internationalisation idea was to employ such short-term international experiences to 'internationalise' its curriculum, to allow also those students with employment and family responsibilities to still prepare to participate more effectively in a globally interconnected business world. And although research assessing the educational outcomes of STIE programmes is fairly new to the literature, there have been several

studies that highlight the benefits of such experiences. This knowledge led to the establishment in 2014 of collaborative partnerships for the purpose of facilitating study abroad experiences with the *Facultatea de Business* of the *Universitatea Babes-Bolyai* (in Cluj-Napoca, Romania) for the winter school as well as the autumn school hosted at the *Institute of Postgraduate Studies* of the *International Black Sea University* in Tbilisi, Georgia.

To complement the collaboration a yearly summer school was organised at the own premises in Amsterdam, last but not least a spring school is under development currently. All STIE's could count on registrations from students all over the globe. So the initial idea of submerging students in an international class-room seemed to work effectively, but the apparent international success of the courses also created a new problem: most students that joined from geographical far away locations, simply could not afford to partake in the full 30 EC elective programme, both time- and moneywise.

3 MOOC: missing link

European universities are currently placing a growing interest in MOOC's (Scopeo, 2013). In the case of our summer school programme MOOC's offer a necessary innovative and flexible learning delivery method that may help widen the participation of the geographically widespread groups of learners (Balaji, Sekhar, 2013). But despite the fact that information and communication technologies (ICT) allow the creation of such new and less costly models of international learning, the faculty concerned has no actual experience in this field, and the 60,000 students university as a whole just offers one single MOOC. The implementation has taken the programme much more time than anticipated, and although now most of the preconditions like hardware and platform have been met, the educational conceptualisation still is new.

3.1 Pros and Cons

What makes a MOOC an attractive option? On an educational level, the fact that it runs within an existing semester, making implementation relatively easy, and allowing staff the necessary autonomy to meet up with institutional requirements. Also the mutual knowledge transfer, the interchanging local perspectives and the joint production of learning resources have enriched the local semesters substantially. To start with today's technological infrastructure allows students to watch on their smart phone or tablet predeparture lectures of the partner universities where the STIE's are hosted. Making it possible to get accustomed to local communication conventions before actually being on the host location (Falconer, 2013). But of course this is just one side of the picture as there are some challenges too: the multiplicity of academic calendars each semester start calls for unwelcome higher mathematics. In addition to that the concepts *virtual* and *ambiguity* are fully incompatible, therefore all learning materials need to be formalised in great detail, since informal contact possibilities are often lacking. And last but not least is the national accreditation organisation's stance on allowing a programme to award national credits (EC) via MOOC's represents an impediment (NVAO, 2015). Because despite nowadays' possibilities of fraud detection, credits are difficult to be obtained when testing took place in an online environment (Pundak, 2014). At the involved institutes this was easily solved by prescribing a mandatory post-exam four times per academic year, but for the foreign overseas students this results in having to make an exam at the start of an upcoming short-term international experience opportunity.

4 Concluding Remarks

This paper concludes that MOOC's are forcing a re-conceptualisation of higher education through the use of online study. While the scope of that re-conceptualisation in the literature has been focussed on business and pedagogical models within HEi's, we feel that more focus is needed on the applied use within existing study programmes. We also feel that students need to be able to also obtain

national credits for accomplished online modules. And as such call upon the involved European institutions to support ambitious future scenarios with legal mechanisms for accreditation and qualification award as well as pedagogical quality standards. As Yuan & Powell indicate (2013), HEi's could rethink the elaboration process of the curriculum toward more open and flexible educational models. And naturally a MOOC shall never be the backbone of an institute's internationalisation strategy, but it is now set to form an attractive alternative to both international and part-time students. And after the initial trail-and-error in designing the learning experiences, we now firmly believe in offering a MOOC as part of the regular internationalisation track, and thus allowing students to learn in a self-regulated way. Which the European Council listed as one of the key competences for lifelong learning.

Hopefully this case-study blending a MOOC with a summer school inspires other institutes or lecturers to reap the internationalisation harvest of Massive Open Online Courses. And it is a comforting thought that there is nothing new under the sun: knowing that the very first MOOC appeared already in 1922 (Bartolomé, Steffens, 2015), when the University of New York started radio courses which were quite 'open and massive'.

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MOOCs pedagogical and didactical approaches

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Abstract

The paper explores different issues and trends in regard to MOOCs pedagogical and didactical approaches applying the Group Concept Mapping methodology (GCM). Group Concept Mapping is a participative research methodology that identifies in an objective way the shared vision of a group of experts on a particular issue (e.g. MOOC pedagogical and didactical approaches).

Seventy-nine ideas have been generated and they were grouped in the following thematic categories: Learning design, Curriculum design, Methodologies, Learning network, Self-regulated learning, Assessment, Technology & Scaling, Participation and Organisation. The study's results provide an empirical basis for making informed suggestions as how to combine the principles and instructional design guidelines of xMOOC and cMOOC.

Keywords

MOOC pedagogies, Group Concept Mapping, Home project

1 Introduction

While the literature on pedagogical approaches in MOOCs has increased in the recent years, it remains a highly underestimated research subject and the number of dedicated studies is still relatively small.

From content point of view, the discussion on MOOCs pedagogical approaches has quite often been replaced by a debate on the affordances of technological platforms. When it comes to classifications of pedagogies they typically include three very general categories: cognitive-behaviourist, socio-constructivist and connectivist (Anderson & Dron, 2011). The debate xMOOC vs cMOOC is useful on a general level, but it is not particularly helpful on micro-level, that is how learning activities should be structured to foster effective, efficient and enjoyable learning. Research also indicates that such a dichotomous, 'either-or', categorization obscures variation and richness of the pedagogic approaches applied (Stoyanov, Sloep, De Bie & Hermans, 2014).

From research methods point of view, it seems that most of the studies apply qualitative methods for data collection and analysis (Bali, 2014; Bayne & Ross, 2014; Kop, Fournier & Sui Fai Mak, 2011). The quantitative methods used are mainly questionnaires (Margaryan, Bianco & Littlejohn, 2015). To the best of our knowledge, mixed methods research, which is supposed to deliver valid and reliable outcomes, is non-existent.

To address these issues, we apply the Group Concept Mapping (GCM) research methodology (Kane & Trochim, 2007; see also Trochim, 1989) for collecting, objectively aggregating and analysing the opinions of experts on various aspects of MOOCs pedagogical approaches. In the remaining part of the paper, we first define the GCM methodology. Then we describe the participants, procedure and the outcomes of the study. Finally we discuss the study's results and draw some conclusions.

2 Group Concept Mapping

Group Concept Mapping is a participatory mixed-research methods approach that identifies in an objective way the shared vision of a group of experts on a particular topic of interest (i.e. pedagogical approaches in MOOCs). Typically, the methodology facilitates the participants to generate ideas, to sort them on similarity of meaning and to rate the ideas on some values (e.g. importance and easy/difficult to apply in practice). Then multivariate analyses are carried out, that include multidimensional scaling analysis (MDS) on the raw sorting data to show the relationship between the ideas on two-dimensional space (x-y) and hierarchical cluster analysis (HCA) on the MDS coordinates to partition the map into groups of similar ideas. In addition, descriptive statistics is applied to the rating data. The resulting concept map shows the relationships and values of individual ideas and clusters of ideas to support interpretation and discussion of the findings.

3 Participants and procedure

We invited all HOME project partners across Europe to participate in the study. Thirty five of them were assigned to the study web environment (Concept System Global Max, 2014) specifically created to facilitate an asynchronous online collection and analysis of the participants' contribution. The demographic characteristics of the participants are presented in Table 5.

Table 5: Demographic questions

Participant Question	Option	Frequency	%
Educational background	Engineering and computer science	5	14.29
	Social Sciences	10	28.57
	Math and Science	2	5.71
	Business & management	1	2.86
	Other	3	8.57
	did not respond	14	40
TOTAL		35	100
Experience	Less than 5 years	2	5.71
	6-10 years	2	5.71
	More than 10 years	17	48.57
	did not respond	14	40
TOTAL		35	100
Expertise	Expert	4	11.43
	High	12	34.29
	Medium	4	11.43
	Low	1	2.86
	did not respond	14	40
TOTAL		35	100
Professional involvement	More in teaching	6	17.14
	More in research	13	37.14
	Other	1	2.86
	did not respond	15	42.86
TOTAL		35	100

25 out of 35 project's partners took part in the idea generation phase. They were instructed to brainstorm ideas about specific instructional guidelines that should be taken into account when designing a MOOC. The participants got 2 weeks for this activity. The idea generation phase resulted in 113 ideas. In the next stage, 'Idea Synthesis', two researchers cleaned and edited the data respecting the following rules:

- Obtain a list of unique ideas, with only one idea represented in each statement;
- Ensure that each statement is relevant to the focus of the project;
- Reduce the statements to a manageable number for sorting and rating;
- Ensure that statements are clear and understandable across the entire stakeholder group;
- Do not prioritize, select on perceived value, or delete unpopular ideas.

The number of the ideas was reduced to 79, which were sent back to the participants to first sort them on similarity of meaning, giving the groups names and then using a 1-5 scale to rate the ideas on two values: importance (1 = relatively unimportant; 5 = extremely important) and difficulty/easy to apply in practice (1 = very difficult; 5 = very easy). The participants were given 3 weeks for the sorting and rating with a reminder after 2 weeks. As the number of sorters was low after 3 weeks, we extended the time for sorting and rating over two months. Thirteen experts participated in the sorting and twelve in the rating.

4 Results

The first outcome of the GCM, which is a result of the MDS analysis, is a point map (See Figure 11). It shows all the 79 ideas and how they are related with more similar ideas proximally located in the two-dimensional space. MDS scaling assigns each idea a bridging value (between 0 and 1). A lower bridging value means more participants have grouped the statements with ideas around it. A higher bridging value indicates that the idea has been sorted together with statements further apart. MDS scaling produces also a statistic, called stress index (a value between 0 and 1) to indicate the extent to which the concept map reflects the raw sorting as represented by a similarity matrix. In this study the stress index is 0.3, which is in the accepted range (Rosas & Kane, 2012).

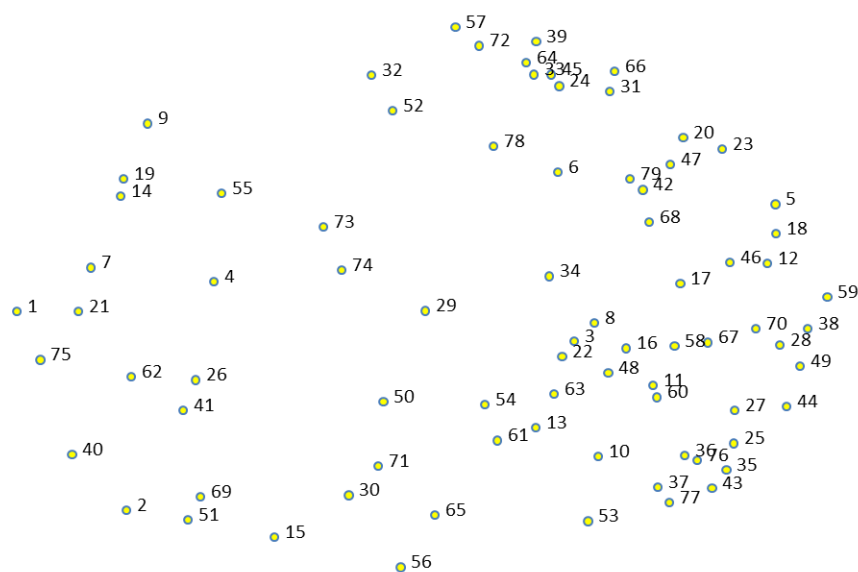


Figure 11: Point map

To make the interpretation more meaningful, we applied hierarchical cluster analysis (HCA) to distinguish themes that emerge from the data. We checked suggestions for different cluster solutions starting from 12-cluster solution and arriving at a 5-cluster solution (see Figure 12 and Figure 13). The starting point is 12-cluster solution because a meta-analytical study including 62 GCM projects found out that the average number of clusters was 10 (we gave a little margin to be on the safe side).

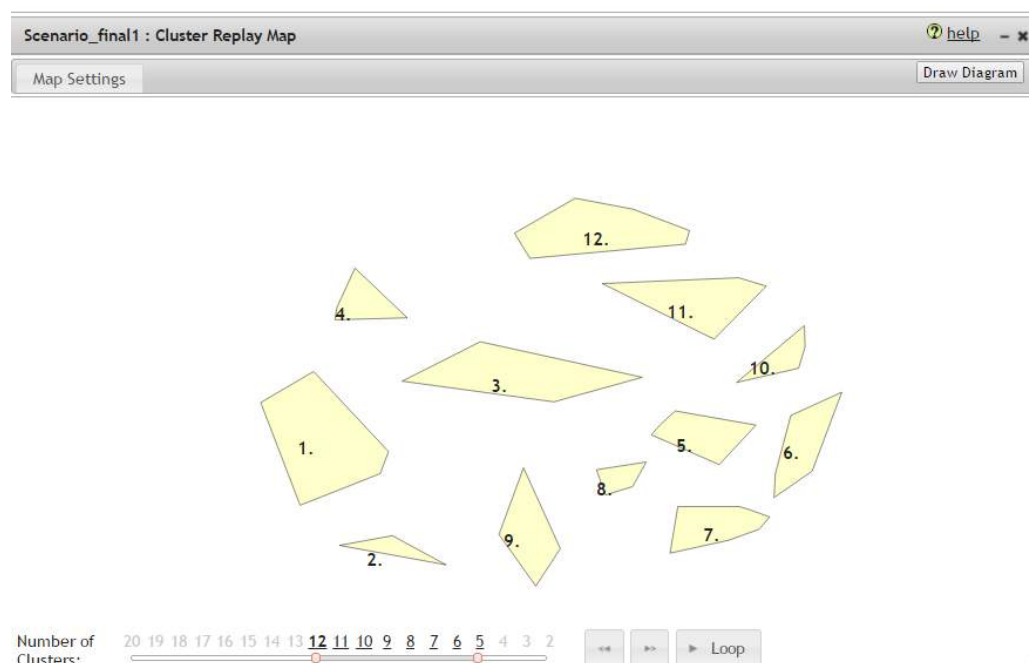


Figure 12: Replay map 12-cluster solution

It has been found that less than 5 clusters does not provide sufficient details to make meaningful interpretations (Rosas & Kane, 2012).

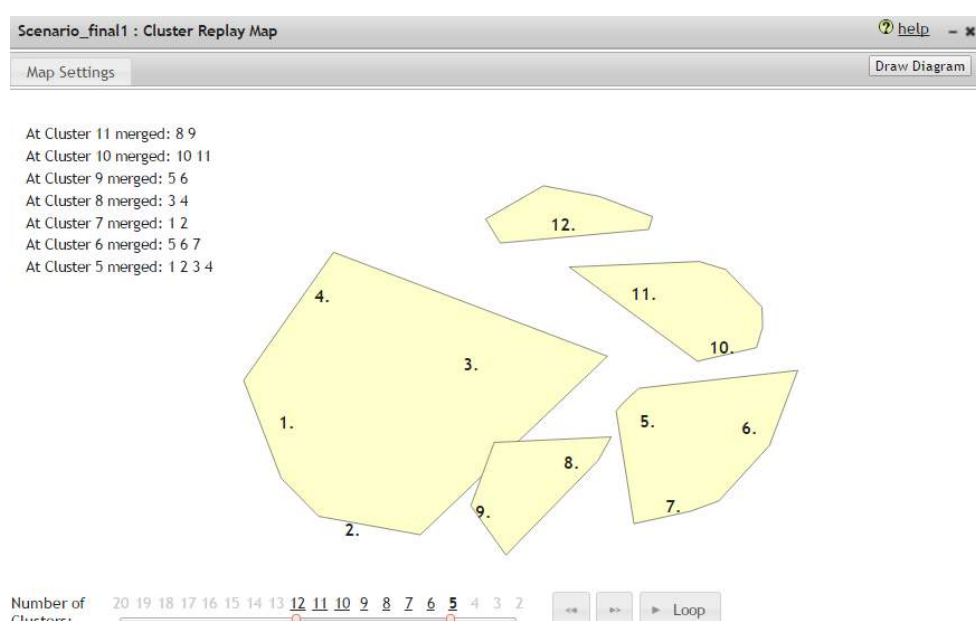


Figure 13: Replay map 5-cluster solution

We then checked whether any suggestion for merging clusters made sense exploring in detail the content of these clusters. Two researchers went independently through all suggestions using a check list with options Agree, Disagree and Undecided. We then look at the cutting point of Agree and Disagree in both check lists to decide upon the final number of clusters (for more details see Kane & Trochim, 2007). We came to the conclusion that 9-cluster solution reflects in a best possible way the data and the purpose of the study (See Figure 14).

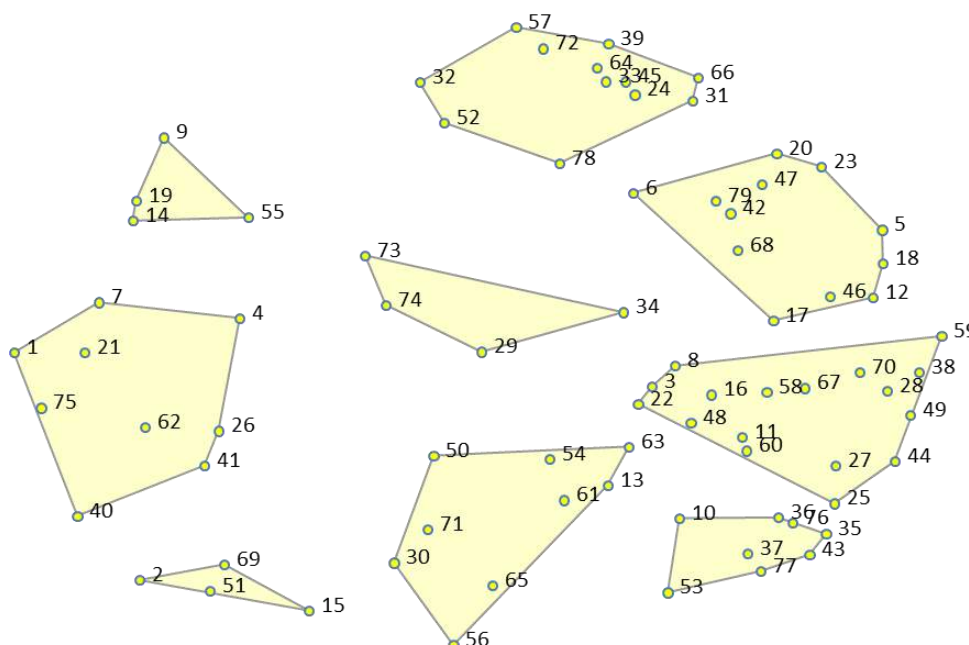


Figure 14: 9-cluster solution

The next step in giving sense of the data was to attach names to the clusters. In general, there are three ways for that:

- by simply going through the content of a particular cluster and deciding upon what meaning the majority of the ideas in the cluster depicts;
- by looking at the bridging values of the ideas in a cluster - the ideas with lowest bridging values express the meaning of a cluster best; and
- by checking suggestions given by the Concept System software, which compares the distance between centroids of the aggregated clusters and the individual groups of statements compiled by the participants during the raw sorting.

The following themes were identified: Learning design, Curriculum design, Methodologies, Learning network, Self-regulated learning, Assessment, Technology & Scaling, Participation, and Organisation (See Figure 15).

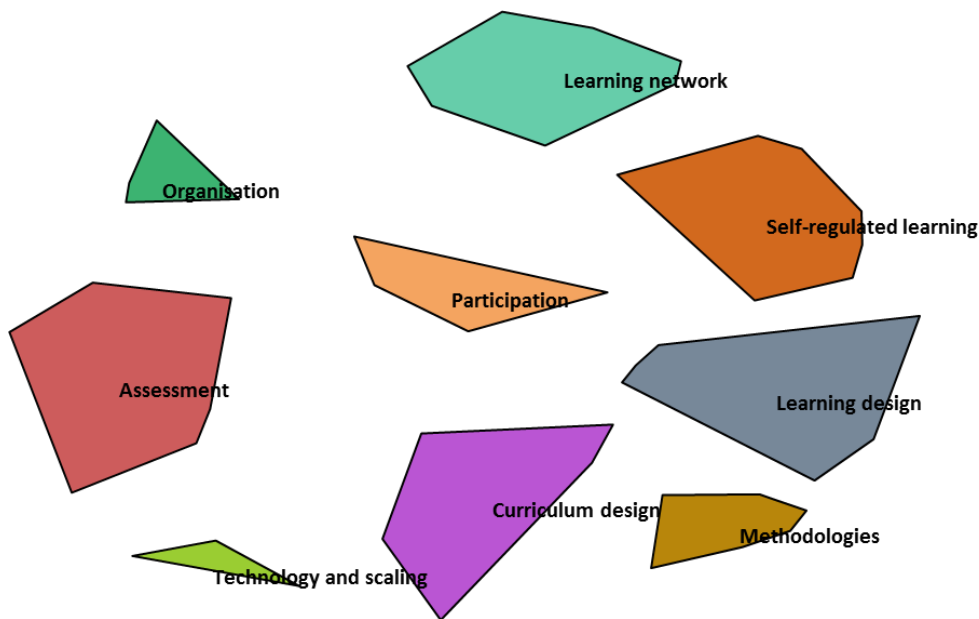


Figure 15: Clusters named

Table 2. presents some representative statements for each clusters.

Table 6: Clusters with representative statements

Cluster	Statement
<i>Curriculum design</i>	<p>There is no 'right way' through the course</p> <p>If MOOC must be suitable for inclusion in regular university programs, the design should be flexible to enable the adaptation of the MOOC to the guidelines of the university</p> <p>Accommodate needs of new target groups of 'non-students'.</p>
<i>Methodologies</i>	<p>Align pedagogies with learning paradigms: you may safely combine different learning paradigms in a single MOOC, but use matching pedagogies for each one of them.</p> <p>Before discussing MOOC reflect on what characterizes good learning.</p> <p>A more nuanced approach (not only xMOOC vs cMOOC) is needed that takes into account an analysis of MOOC pedagogy at a micro level of individual course design.</p>
<i>Learning design</i>	<p>Always start from your learning goals / what you want students to achieve through the MOOC.</p> <p>Look at the classical online learning and teaching for inspiration for MOOC pedagogies.</p> <p>Adapt the rhythm of the MOOCs to learner needs.</p>
<i>Self-regulated learning</i>	<p>Participants are expected to work individually and take control of their learning.</p> <p>Each participant forges her/his own learning path through the materials</p> <p>Participants are asked to reflect continually during the course,</p>

their personal blogs are particularly important in this respect.

<i>Learning Networks</i>	<p>Try to generate a community of interest among learners that go beyond the MOOC itself.</p> <p>Create a Virtual Community of Practice (that persists after the course's life cycle).</p> <p>Experience gained by the participants needs to be reflected upon, shared and discussed with the others.</p>
<i>Assessment</i>	<p>The key dilemmas in MOOCs centre on what participation actually means, how it should be measured, and consequently, what metrics of success and quality are appropriate for these courses.</p> <p>Include case-studies, interaction and group work in the assessment.</p> <p>If MOOC must be suitable for inclusion in regular university programs, suggestions must be available for the university about how to perform the examination.</p>
<i>Technology& scaling</i>	<p>Explore affordances of emerging technologies.</p> <p>Systematically check the scaling ability of the solutions you use. Can each one of them scale up from, say 100 to 1000-2000 students?</p> <p>Build a framework that is based on Google Apps supporting most of the technical and pedagogical resources that are common in MOOCs.</p>
<i>Organisation</i>	<p>Clear contact point/person for questions. Contact points for specific topics (technical, administrative, content issues).</p> <p>Share the learning materials and resources openly, using for instance, Creative Commons CC0, CC BY or CC BY-SA licensing.</p> <p>Define the technical tools students are assumed to be able to use for the specific MOOC.</p>
<i>Participation</i>	<p>Accommodate different levels of participation (from 'completing' to 'lurking').</p> <p>Reach new and small/specific target groups.</p> <p>Profiles and characteristics of MOOC learners that include motivational factors, ethnicity, and socioeconomic status rather than simple demographics of age and gender alone.</p>

The most coherent cluster is Learning design, which means that the participants agreed most consistently on grouping the statements in this cluster (cluster bridging value (BV) is 0.08). The cluster next on the list on this criterion is Methodologies (bridging value of 0.15), followed by Self-regulated learning (BV= 0.19), Learning network (BV= 0.22), Curriculum design (BV= 0.25), Participation (BV= 0.26), Technology & Scaling (BV= 0.47), Assessment (BV= 0.48) and Organisation (BV= 0.81).

Rating data brings some additional information. Almost all of the clusters score high on importance with 5 layers (mean ranging between 3.86 and 3.99). Some exceptions are Self-regulated learning, Assessment (both with 3 layers) and especially Technology & Scaling (1 layer). It should be noted that all clusters score on average above 3. The margin between the lowest and the highest scores is relatively narrow. See Figure 16.

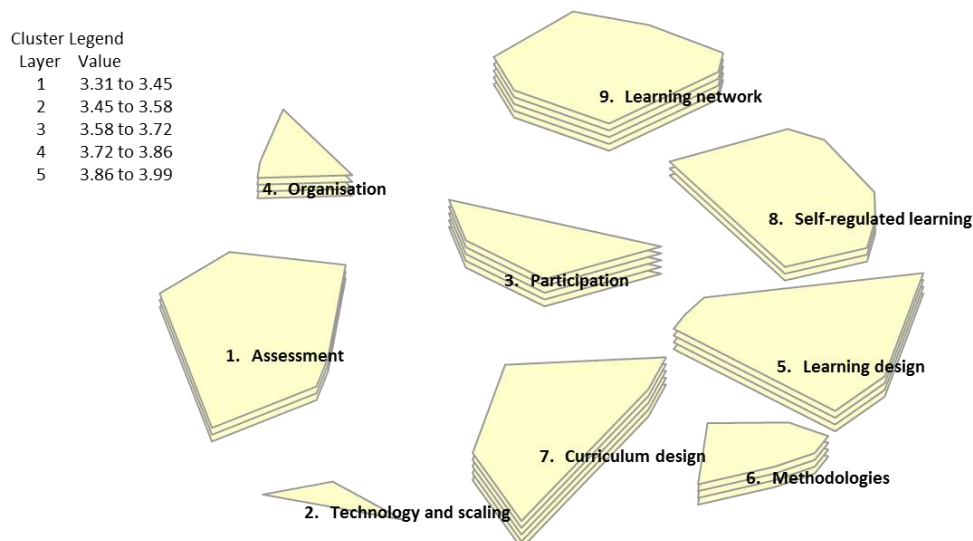


Figure 16: Rating map on Importance

The analysis of rating data on difficulty/easy to apply provides a rather different picture (see Figure 17). Organization scores again the highest (very easy to apply with 5 layers), followed by Self-regulated learning (again with three layers like its rating on Importance), Learning design with 3 layers but two less compared to its rating on Importance, and Technology & Scaling (3 layers but two more in contrast to its rating on Importance). The margin between the lowest and the highest score is large. On that criterion Curriculum design, Methodologies, Learning network, Participation, and Assessment got each a low average score.

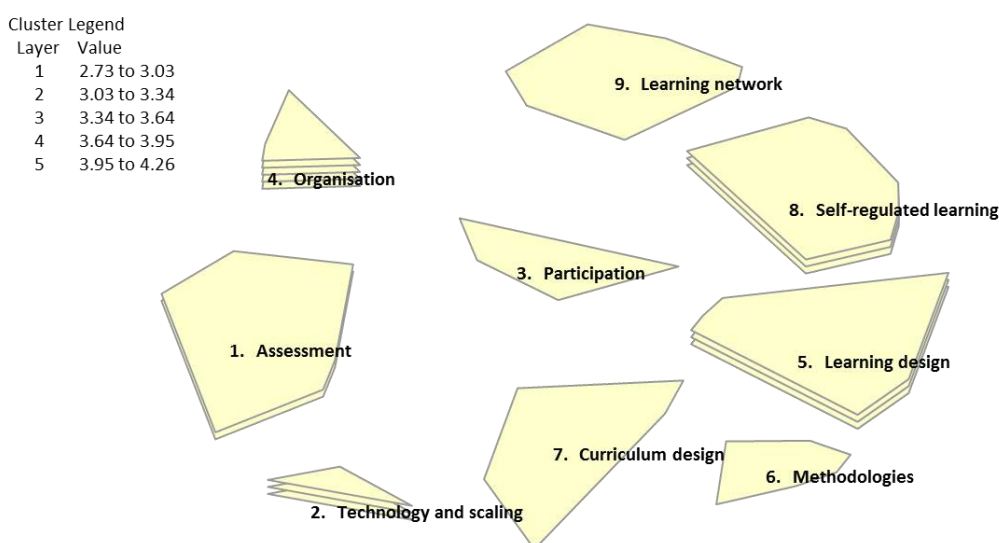


Figure 17: Rating map on Difficulty/Easy to apply

Another visualization that helps to compare the clusters on the two values and see the relative position of clusters to each other is pattern match. See Figure 18, where for importance: 1 = relatively unimportant, 5 = extremely important; for difficulty: 1 = very difficult; 5 = very easy.

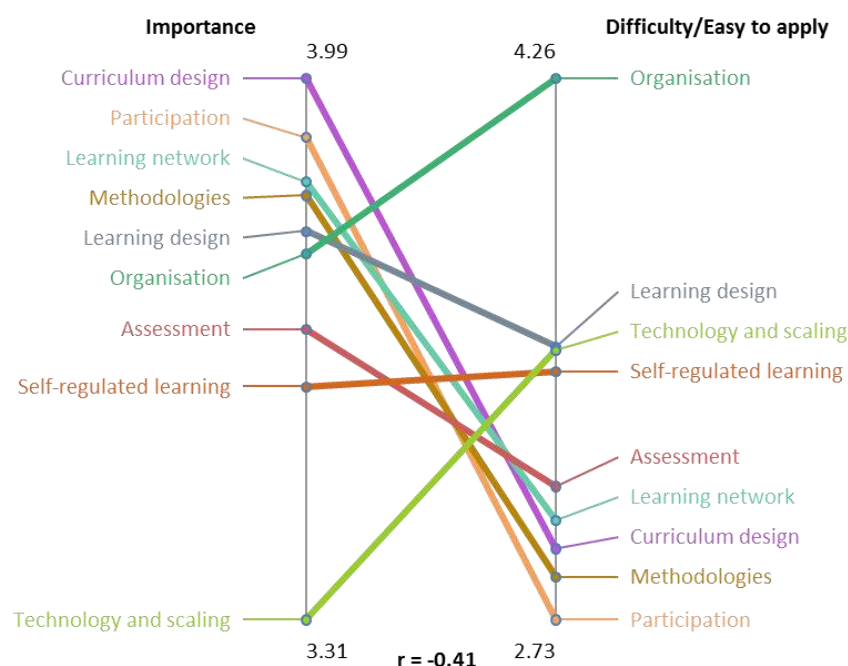


Figure 18: Patter match Importance vs Difficulty/Easy to apply

The graphic provides a clear indication that Curriculum design, Participation, Learning network, Methodologies and Learning design score very high on Importance and very low on Difficulty/Easy to apply. An opposite view is presented by the scores of Organisation and Technology & Scaling. The scores on Self-regulated learning are connected by a straight line. The correlation (Pearson product-moment) between the two ratings data is moderate downhill.

Pattern matching can be used also to compare the ratings of different groups participants. For example, the participants involved more in teaching and those involved more in research do not differ in their ratings on importance and difficulty/easy to apply ($r_{imp} = 0.78$; $r_{diff} = 0.83$, respectively) See Figure 19 and

Figure 20.

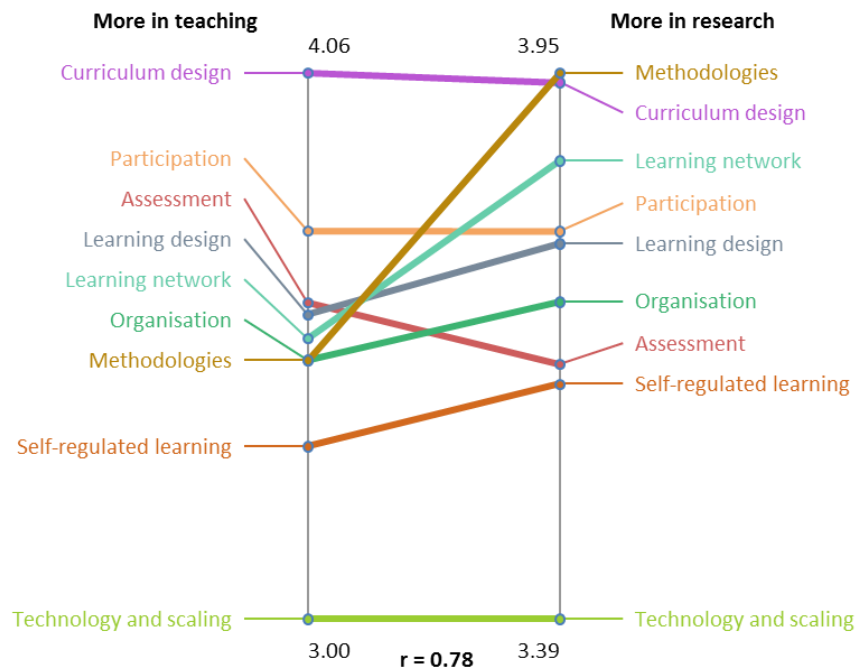


Figure 19: Pattern match Involvement rating on Importance

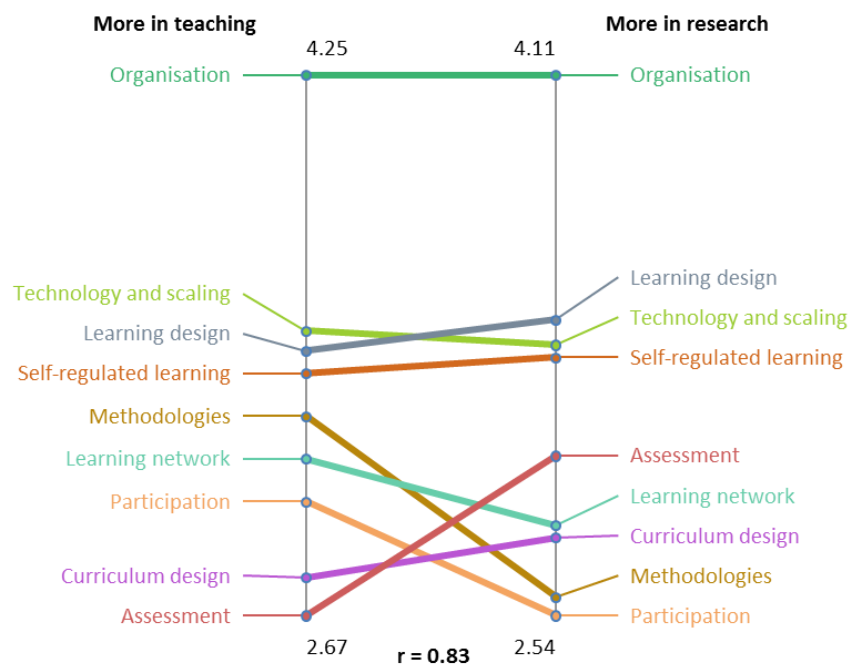


Figure 20: Pattern match Involvement rating on Difficulty/Easy to apply

While the participants with different level of expertise diverge significantly on how they rate the statements on Importance ($r = -0.51$), there is practically no difference in ratings on Difficulty/Easy to apply ($r = 0.93$). See Figure 21 and Figure 12.

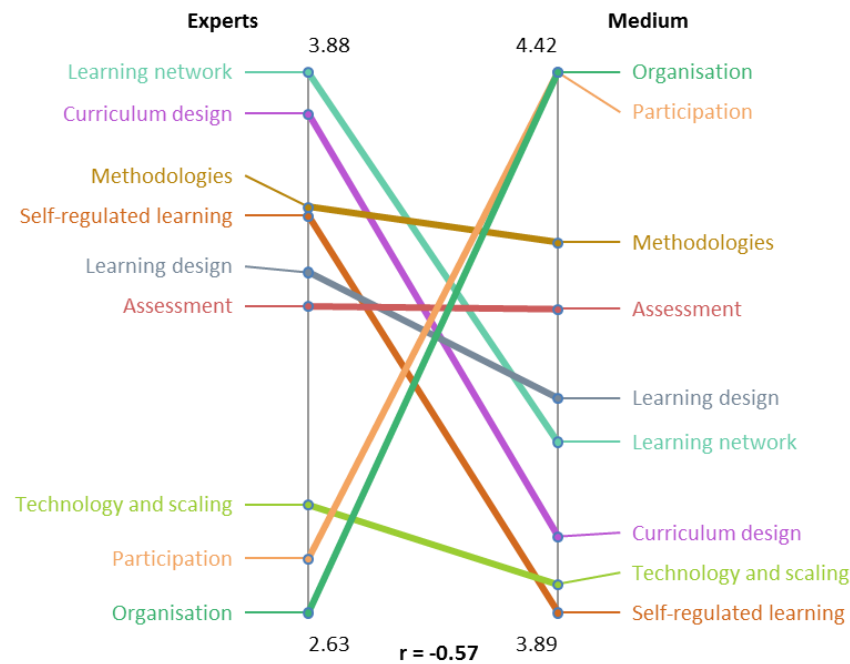


Figure 21: Pattern match Expertise rating on Importance

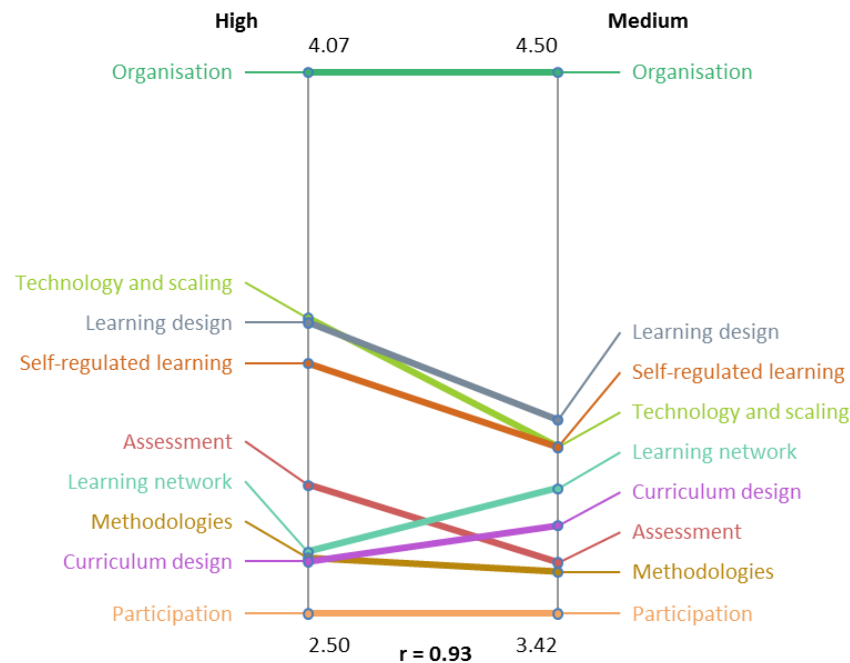


Figure 22: Pattern match Expertise rating on Difficulty/Easy to apply

5 Discussion

Six out of nine themes as identified in the HOME project concept map (Figure 15) reflect issues and trends that are directly related to MOOCs pedagogical approaches. These themes are: Curriculum design, Methodologies, Learning design, Self-regulated learning, Learning network and Assessment. The other three, namely Participation, Technology & Scaling and Organisation, could be considered as supportive. In GCM, the relationships between clusters are defined by distances (like the relationship between individual items). Methodologies, Curriculum design and Learning design are closely related to each other, which also can be verified by the ideas included in these clusters. The

clusters represent three levels of analysis. At a macro level, the cluster Methodologies includes relevant theoretical frameworks. Suggestions are made to combine different learning paradigms, reflect on what characterize good learning, attempt a more nuanced approach (e.g. not only xMOOC vs cMOOC) taking into account the analysis of MOOC pedagogy applied at an individual course design, considering neuroscience and heutagogy, and that technological affordances do not automatically transform themselves into pedagogical affordances.

At a meso level, the Curriculum design cluster contains guidelines supporting course design, such as the need for flexibility of the design, i.e. enabling adaptation of the MOOC course to the university's guidelines; accommodating the needs of new target groups of 'non-students', using open educational resources (OER) and considering learners as co-constructors of the course.

At a micro level, the Learning design cluster contains ideas that can contribute to a good design blueprint: define learning objectives, confront learners with a problem, issue, or challenge, preferably, real-life one, provide for each task explicit support in terms of background information, examples, procedures, methods, techniques, and tools, provide feedback to continuously reflect on the learning progress, accommodate learning preferences, and focus not only on personalisation but also on collective intelligence.

The Learning network cluster emerges from the data to emphasize the need for interaction, dialogue and collaboration. Some of the statements in the cluster are more common for xMOOCs, i.e., experience gained by the participants needs to be reflected upon, shared and discussed with the others, enhance social collaboration and interaction to provide a richer learning experience, as a way to reduce drop-out rates, and the need for a visible presence of teachers/facilitators in the course space. Most of the statements, however, define features of cMOOCs, i.e. create a community of interest among learners that go beyond the MOOC itself, promote social collaboration among students internally as well as among external networks, MOOCs rely on the benefits of scale through significant interaction with a distributed network of peers, and MOOCs alter the relationship between learner and instructor and between academia and the wider community by potentially providing a very large and diverse forum and meeting place for ideas.

The cluster Self-regulated learning contains statements representative for either internal or external learning locus of control (Stoyanov, 2001). Examples of statements that reflect the need for supporting internal learning locus of control are: 'Participants are expected to work individually and take control of their learning', 'Participants are asked to reflect continually during the course, their personal blogs are particularly important in this respect', and 'Each participant forges her/his own learning path through the materials'. There are statements in this cluster that imply also a support for external learning of control: work with study guides for transparent and clear communication and information, and organize convergence sessions. In addition, the cluster includes statements that suggest combining internal and external locus of control, namely: offering additional materials and resources to enable interested participants to expand the topic (including links to other related MOOCs to facilitate for the continuation of the learning process on a topic) and invite eminent researchers to interact with students within the MOOC discussion space as one of the ways of providing learners with alternative points of view. This cluster plays a bridging role between a more instructivist area on the map (Curriculum design, Learning design, Methodologies) and a more connectivist area (Learning network).

The results of this study clearly suggest combining instructional principles and guidelines of xMOOCs and cMOOCs. First, there are clusters that specifically support either xMOOCs or cMOOCs. Second, this is the bridging role of self-regulated learning containing statements supporting both external and

internal learning locus of control. Third, there are individual statements in xMOOC clusters that support cMOOCs (e.g. 'Focus not only on personalisation but also on collective intelligence', 'Use connectivist instructional principles and strategies to move beyond prescriptive learning') and statements in the cMOOCs cluster that support xMOOCs (e.g. 'Visible presence of teachers/facilitators in the course space'). The most important is that the proposition of combining xMOOC and cMOOC has been operationalized through concrete ideas that make the clusters.

Assessment is unexpectedly far away from the pedagogical clusters, meaning no relationship between the two zones as seen by this group of participants. While the cluster contains some ideas that are valid for any online learning assessment ('Include case-studies, interaction and group work in the assessment'; 'Include student peer review in the evaluation'), the focus seems to be on some specific MOOC issues regarding assessment such as low completion rate, badges and certification, and inclusion in regular universities programmes. Some ideas about assessment can be found in other clusters but they are formulated in a close relation to other pedagogical issues (i.e., the need to relate learning objectives with assessment strategies and personalization based on dynamic assessment and data gathering).

The same trend can be detected with technology. There is a cluster about technology (with a few items), but it is mainly related to technological platforms and scaling from one side, and general purpose technology like Google apps, from the other. Specific idea about technology can be found in other clusters (e.g. 'MOOC pedagogy is not embedded in MOOC platforms', 'Take into account the possibilities of the platform you will use from the start of the design process', 'Use tools that support MOOCs' instructional design (e.g. Learning Designer, CompendiumID, Cloudworks, Design Decision Framework)' and 'Harness the power of social and participatory media to enable participants to communicate and collaborate through a variety of channels'. Technology should always be considered in context.

The cluster 'Participation' is located in the centre of the map containing ideas about level of participation and type of participants. It connects pedagogical clusters ('east coast') with assessment, organization and scaling areas ('west coast').

'Organisation' includes ideas that refer to different organizational aspects such technology, contact points/persons, and Creative Commons licensing. This is the least coherent clusters (high bridging values for all ideas in it). It seems the participants had difficulty grouping these items.

While we believe that the results of the GCM study on MOOC's pedagogical approaches contribute to the efforts in this specific research field, they should be considered with caution. The sample is small. For results based on the sorting, it is perhaps not an issue (Trochim, 1993; Rosas & Kane, 2012), but for the rating it is. It should be noted, however, that in GCM sorting is the primary activity, rating is the secondary one. This GCM study should be considered as an exploratory study that invites for formulating more precise hypotheses that need to be further explored.

6 Conclusions

The conclusions that could be drawn from the utilisation of the GCM in this study on MOOC's pedagogical approaches are as follows:

1. The study identified the following thematic clusters: Learning design, Curriculum design, Methodologies, Learning Network, Self-regulated learning, Assessment, Technology & Scaling, Participation, and Organisation.
2. Curriculum design, Methodologies, Learning design, Self-regulated learning, Learning network and Assessment are directly related to MOOC's pedagogical approaches. Participation, Technology & Scaling and Organisation could be considered supportive in this respect.
3. The participants most consistently agreed on grouping the statements in the cluster Learning design, followed by Methodologies, Self-regulated learning, Learning network, Curriculum design and Participation. It seems they had most difficulties grouping the statements that make the cluster Organisation.
4. The results of this study are in line with other scholar works that propose combining instructional principles of xMOOCs and cMOOCs but the current research provides empirical basis and concrete guidelines how this instructional design integration could be implemented. The statements in the clusters that directly reflect MOOC's pedagogical approaches can be considered building blocks for designing concrete MOOCs.
5. Curriculum design, Participation, Learning network, Methodologies and Learning design score very high on importance but very low on difficulty/easy to apply. This is in contrast to the rating pattern of Organisation and Technology & Scaling.
6. There is not a difference in ratings on importance and difficulty/easy to apply between the participants who are involved more in research and those who are involved more in teaching. A difference is observed between expert and non-expert participants on importance but not on difficulty/easy to apply MOOC instructional guidelines in practice.

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How We Use Video in KU Leuven MOOCs

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Abstract

In this paper we share the first experiences of the KU Leuven regarding video production for MOOCs. We reflect on the different roles video can fulfill in an online learning context and illustrate with concrete examples. Our first steps in the world of MOOC videos have also taught us some important lessons which might be of use to others embarking on their own MOOC adventure.

Keywords

MOOC, video, video pedagogy

1 Introduction

At the start of the MOOC movement, in 2012, a distinction generally was made between two types of MOOCs (Siemens (2012) xMOOCs (guided by an instructivist opinion on education) and cMOOCs (guided by a connectivist opinion on education). Nowadays, a lot of experimentation with different pedagogies is being undertaken. In many cases, this leads to a new acronym to indicate the type of pedagogy used in the MOOC, and how the MOOC is organized (e.g., Clark, 2013).

In an xMOOC, learning materials are offered in small units that are easy to understand and process, usually 12–20 minutes long. Instead of readings, the main medium to transfer content and information is video. Other means are online tests, exercises and games. Short videos and exercises follow each other, so that students have to practice what they have learnt. In addition, forums and wiki pages are used to give participants a social learning experience. Video production is often one of the major cost drivers. A report estimates high quality video production cost of \$4,300 per hour of finished video¹³.

The main discussions about developing MOOCs are related to different pedagogical principles. There are several viewpoints on what pedagogy provides in terms of an effective learning experience. Bates (2015) presented an overview of the issues influencing what (if anything) constitutes an optimal pedagogy. A considerable amount of research is already available, based on decades of experience with distance education and eLearning (e.g., Sloep, 2014). The basic design rules of online education relating to the efficient choice of multimedia should be followed (Bates, 2015). In this context, experiments with video production are essential, especially to prioritise what kind of video will benefit most from professional production processes. This paper describes the first experiences of the KU Leuven regarding the use of video in MOOCs, especially related to pedagogical use and production process.

2 Multiple roles for video

Since the start of this academic year (2015-2016) the KU Leuven offers its first three MOOCs to the world via the platform edX. “The Great War and Modern Philosophy (GRAPH)” looks at the way the

¹³ http://cbcse.org/wordpress/wp-content/uploads/2014/05/MOOCs_Expectations_and_Reality.pdf

First World War influenced the philosophic discourse at the beginning of the 20th century. “Trends in e-Psychology (ePSY)” discusses innovative technologies to improve our physical, mental and social health. The third MOOC, “The EU and Human Rights (EUHURI)”, deals with the impact of the EU on human rights.

As in most MOOCs, the main medium to transfer content and information in these courses is video. The developed video material takes up different roles in the online context.

2.1 Promoting and motivating

To announce the MOOC and to stimulate potential students to enroll, a short trailer is published before the launch of the MOOC. In accordance to the guidelines of the platform provider edX, the trailers are available three months before the start date of the course. Their goal is to trigger the students’ attention by asking intriguing questions or posing a current problem. The trailer also summarizes briefly the content of the course.

2.2 Personalizing

Student engagement in a fully online setting always benefits greatly from the online “presence” of the teachers. One way to realize this is a short audiovisual presentation of all teachers and moderators involved. An additional method we have used is the personal introduction of assignments and tasks through short video messages.

2.3 Guiding

Videos are also used to guide the learners through the course. Intro and outro videos form the connecting thread throughout the modules and the MOOC. The intro video focuses on what’s coming and directs the learners’ attention. Outro videos summarize what has been done and build a bridge to the next chapter in the story of the MOOC.

2.4 Giving feedback

At KU Leuven we are currently experimenting with the use of video to give feedback to the students in the MOOC. This is another way of supporting the online presence of teachers and moderators and gives the opportunity to respond quickly to what’s happening online in a “personal” way.

In the MOOC “ePSYCH” we are preparing videos to answer the most asked questions throughout the different modules. An important factor to take into account here is of course the time pressure for the preparation and production of these videos. Another idea developed from the MOOC “GRAPH”. This MOOC is also offered as part of the traditional on campus education. The issues that are being addressed in the discussion forums of the MOOC are also addressed during face-to-face discussions in the class room. Recordings of these class discussions can then be introduced in the MOOC as a reflection on what is happening online.

2.5 Learning Material

The bulk of the video material produced is of course audiovisual learning material. Here we can also differentiate according to the different goals of this material.

2.5.1 To transfer knowledge

The audiovisual learning material in our MOOCs consists of course mainly of knowledge clips: short videos in which a specific subject, topic or principle is explained. The most used format is this of a recorded presentation (e.g. PowerPoint) in combination with a voice-over or a talking head. When using this format, it is important to respect the multimedia principles of R.E. Mayer¹⁴. Respecting these principles will greatly improve the learning effect of your knowledge clips.

¹⁴ Mayer (2006). These principles (proved by experiment) state that:

2.5.2 To demonstrate

Video is of course a very suitable medium to demonstrate practical skills and experiments. By filming an expert solving a problem, a video can make the expert's thought process explicit and "visible". In our MOOC "GRAPH" for example, a discussion between two philosophers was filmed as a demonstration of the philosophical methodology.

2.5.3 To offer vivacious experiences

Another specific advantage of video is the possibility to offer the learners vivacious experiences from the comfort of their own homes (Koumi, 2006). Video techniques such as fast and slow motion, aerial views, microscopy etc. give the students access to observations that cannot be made otherwise. In "GRAPH" the experience of the First World War is brought to life with historical footage and by filming knowledge clips against the background of important battle fields.

2.5.4 To show a situation or behaviour

Video can bring real-life or dramatized situations to the students. In the MOOC "ePSYCH" one module deals with "e-mediation" (online tools to mediate in a conflict). To show the concrete use of the tools, the module follows a story line about a couple in conflict. This story is told through a series of short (dramatized) videos.

3 Lessons Learned

Even though the first KU Leuven MOOCs are still running at this moment and it is too early to collect student feedback, there are already some recommendations we can make regarding the production process of videos for MOOCs.

The most important lesson by far, is the importance of planning ahead and the phase of pre-production. In this phase the scenario for the video is written. The scenario forms the starting point and the guideline for the video production. Writing a scenario is an absolute necessity if you want your videos to reach their goals. A scenario consists of a description of all auditory and visual elements in the video and how they relate to each other. A good scenario ensures for example that the multimedia principles are respected (Koumi, 2006). Whether it is a good idea to write down all spoken text from voice-over or talking head, depends on different factors (TopMOOC Research Project, 2015). Some teachers prefer to work with an autocue while others feel the autocue prevents them from being spontaneous.

When using the edX platform it is nevertheless always required to provide the videos with transcripts. While transcripts will seriously enlarge the accessibility of the video material, making these transcripts is very time-consuming. The video production process needs to be planned taking this into account. A good workflow here is essential. In our case for instance the required provision of transcripts does complicate the use of video for "immediate" feedback.

Video is an expensive medium and the relevance of a high production value for the learning process remains uncertain (TopMOOC Research Project, 2015 & Guo e.a., 2014). It is therefore better to use professionally produced videos sparsely and in function of the goal of the video. Trailers and

-
- students learn better from pictures and spoken text than from pictures, spoken text and written text (redundancy principle),
 - when you use written text, it should be to support the spoken text: keywords, structure, new terminology (signaling principle),
 - corresponding pictures and written text should be presented close to each other (spatial contiguity principles)
 - corresponding pictures and text should be presented at the same time (temporal contiguity principle)
 - do not use interesting or entertaining text or visuals which do not contribute to the learning goals

(dramatized or real) videos portraying real life situations for example, will benefit from a professional production. At KU Leuven we use a three-layered approach to video production:

- A professional team produces the high-end videos.
- A trained student team can be used to produce videos which require less technical and media expertise (routine jobs, standardized templates).
- Basic knowledge clips can be produced by the teachers themselves with support from media and technology experts.

Teacher coaching is a crucial element in all three approaches. Teachers are content experts and have usually no media expertise (TopMOOC Research Project, 2015). In our experience teachers also tend to underestimate the amount of work and knowledge which is required to produce qualitative videos. Introductory workshops for teachers about writing good scenarios, camera training, screencasting, video production etc. are therefore no luxury.

4 To conclude

Our journey in the world of MOOC videos is just beginning and there is still a lot we can learn from more experienced MOOC providers. We do agree with the recent study produced by the TopMOOC research project (TopMOOC Research Project, 2015) that a lot more research is needed regarding the pedagogical use of video. We are convinced that there are still a lot more possibilities for educational video to explore. So that in the end this great (but expensive) learning material is used in the most efficient way.

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Part 6: Shared services in European MOOC context

Methods and Models of MOOCs Integration in Traditional Higher Education

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How to design for persistence and retention in MOOCs?

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Shared Educational Services for the development MOOCs, a proposal for a European collaboration

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Shared European Educational Services from the Perspective of Finland

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Shared Services for MOOC Offerings: A Vision for Turkey

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Methods and Models of MOOCs Integration in Traditional Higher Education

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Abstract

Society expects from the educational system to provide a new type of worker able to learn independently, online for their entire life – the new open life long learning student, but the traditional higher education is not equipped for this.

This paper presents some possible solutions based on the experience of several pilots to implement a blended learning model by merging content from MOOCs (Massive Open Online Courses) into a traditional higher education Masters Course. The main objective of the pilot was to examine how a MOOC based flipped classroom model might improve student learning and digital literacy skills acquisition in a traditional higher education course, as well as to analyse the MOOCs impact on students' learning behaviour. Advantages and limitations on using this educational model from concepts to management and technology are included.

Keywords

MOOCs, higher education, flipped classroom, blended learning

1 MOOCs, and open student

Since 2008 (Siemens, Downes, 2008), but predominately since 2011, MOOCs have become one of the major instruments of both innovation and disruption in instruction, especially in higher education. If anything, MOOCs have opened the eyes of many tutors and policy makers, encouraging them to start rethinking how courses are delivered to students.

The recent societal development has imposed a new model of worker for the 21st century, one who will need to learn independently and digitally his entire adult life. The 21st century workplace requires well-educated, imaginative, collaborative, self-reliant people who take personal ownership and will go the extra mile - 'creative creators', as Tom Friedman (2011) calls them, but we prefer to call them Open Life Long Learning Student, as we envision that to learn in an open education system will be their preferred method for acquiring new knowledge. But, are they ready to identify, access, learn, analyse, apply, practice new knowledge across different media, information, communication, tools as to enhance their skills and develop their careers? In the higher education institutions, do we prepare them for this? Professors, researchers and even institutions have piloted different methods for improving their digital, 21st century skills.

Some universities professors are using MOOCs in a successful symbiosis with their traditional courses, embracing blended learning or the flipped classroom concept (Bruff, D. O., et al, 2013). This has usually occurred when the course developers and tutors of the MOOCs were also the ones who had been teaching the traditional course (Ghadiri, K., et al, 2013). This idea of giving students more opportunities to work collectively is certainly engaging and relates to the new methods of teaching STEM subjects and new approaches to engineering education (Holotescu, et al, 2014) (Vasiu, 2014).

2 The UPT experience in integrating MOOCs in Higher Education

There are several ways in which MOOCs can be blended in higher education courses mainly based on the topic complementarity with the course, the synchronicity between the MOOCs and course, and the numbers of MOOC to be integrated. In Politehnica University of Timisoara (UPT) there have been several pilots on integrating MOOCs in traditional courses and in the assessment and evaluation of student coursework based on this (Holotescu, et all, 2014) (Vasiu, 2014).

One UPT case study was based on the participation of students from the undergraduate course on Web Programming in different MOOCs, and integrating this experience into a blended course run on Cirip.eu, in a dedicated private group in Autumn 2014 (Holotescu, 2014). Reporting and analysing this study, two thirds of the students (66%) have completed more than half of the assignments, while nearly a quarter (24%) completed the whole course; most of these MOOCs were in English and a small number in French. However, several students have participated in the collaborative translation of materials into Romanian, where possible; some of the students reported that they have followed a few MOOCs in parallel with supporting other disciplines during the Autumn term (for a few courses, their activities in MOOCs were formally recognized by other teachers) or just for self/individual study.

Another UPT study involved Master of Science students' in the Instructional Technologies course where MOOCs were used as external resources on the course during Autumn 2014. The 27 students involved took 16 courses, chose freely by students on subjects related to educational technologies. During the evaluation of this pilot study, 19 students completed the MOOCs to which they subscribed, the rest using the materials only as reference. An interesting aspect of this pilot was the continuous critical discussion between the students and the teacher regarding the quality of the video materials, the instructional methods used in different courses, the course interaction between peers and the evaluation and assessment methods. Some students suggested that in a MOOC the students should have the possibility to choose which of the learning pedagogies they want to follow (Andone, 2015). A wiki tool in CVUPT was used by students to create or contribute to course content, which they assessed as relevant to the specific topics indicated by the teacher. The topic with the most comments and references was related to course structure, students concluding that "In order to have quality content, the teachers and course material creators should have access to a number of powerful and intuitive tools for content editing and structuring".

3 The MOOCs in Higher Education Methodology

The full methodology and process of implementing MOOCs in traditional higher education is described in (Andone, 2015).

Based on our research and 3 years of experience on integrating MOOCs and OERs in courses offered to students in traditional universities, we identify three major methods of integration, each with its challenges.

Table 1: Integrating MOOCs in higher education methods

method	Description	Advantages	Challenges
Credit transfer MOOCs	<p>Validation and integration of a full MOOC course in HE curricula</p> <p>Credit transfer recognition of finalised MOOC courses or MOOC micro-specialisation in HE accredited specialisations</p>	<p>In Europe it can be based on ECTS (European Credit Transfer System) (e.g. some courses on iVersity, FutureLearn)</p> <p>Students and teachers develop new digital literacy skills</p> <p>Learning autonomy, self-assessment, assuming responsible learning objectives</p> <p>Virtual mobility is implemented (new skills for an open long life learning student)</p> <p>Reducing the costs and the administrative burden on HEI</p>	<p>Validation and integration – different stakeholders with different goals (international bodies to validate the course quality? E.g. EADTU OpenUp Quality Label)</p> <p>Different national legislation and quality assurance standards and regulation</p> <p>Recognition of online ECTS is accepted only in some EU countries, and it requires a formal assessment</p> <p>Less MOOC courses offered in non-international languages</p> <p>Evaluation and assessment (method, qualification, etc)</p> <p>Strategy for co-operation between professors, courses, universities (a challenge but the main future advantage)</p>
MOOCs/OERs integrati on In a course	<p>Integrating a full MOOCs/OERs in a course as part of course activities, group work, project, laboratory</p> <p>Implemented mainly by universities and professors who also produce the course, but also by some professors (method used by us)</p> <p>In two ways:</p> <ol style="list-style-type: none"> 1. Student choose the MOOCs/OERs independently (give full control to students) 2. Student follows the MOOCs/OERs indicated by the professor 	<p>Exposure to a global learning community</p> <p>Access to quality information, resources</p> <p>Integrated face-to-face discussions with some tutor support in class</p> <p>The curated use of information – better analyse & synthesize abilities</p> <p>Control given to student, student autonomy in assessing their own learning needs</p> <p>Students and teachers develop new digital literacy skills</p> <p>Open scholar – open student; Openness to culture of knowledge-sharing and re-use, open education</p> <p>Partially the Virtual mobility is implemented, students gain new skills as an open long life learning student</p> <p>Reduced costs for HE course production, but similar in teaching hours</p>	<p>Evaluation and assessment of student activity in a MOOC (partial, if MOOC is completed, percentage of course assessment)</p> <p>Complex course deign management for professors</p> <p>Complementarity and synchronicity of the MOOC with the traditional course</p> <p>MOOCs/OERs curation and quality validation</p> <p>Different national legislation and quality assurance standards and regulation, to allow online courses to be integrated even partially in face-to-face HE</p> <p>Less courses in not international languages (mid-size countries, non-English speaking students)</p>

MOOCs/ OERs elements as resources	Integrating MOOCs/ OERs as external course resources, reference, bibliography The MOOCs/OERs selection and validation is done by each professor	Open scholar – open student; Openness to culture of knowledge-sharing and re-use, open education Access to quality information, resources Integrated face-to-face discussions with full tutor support Retrieval learning Reduced costs for HE course production, but similar in teaching hours	Time-consuming as not a clear MOOCs/OERs quality approved repository exist Professors prior experience in designing and running online courses is needed Evaluation and assessment of student work
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5 Conclusion

We consider that in today's world, it can be beneficial for every University to at least be involved in the MOOC experience, and for any higher education academic it can be a different experience. For Romanian universities, which are public funded and where online learning is not encouraged or recognized, the involvement on integrating MOOCs in a higher education environment is mainly backed by their belief that valuable knowledge and information need to be made available to the students, new methods of teaching and instruction need to be used and students need to be fully encouraged to discover and develop skills for online and lifelong learning, also by eliminating the confusion with distance, blended, open education, as we believe this is just 21st century learning.

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How to design for persistence and retention in MOOCs?

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Abstract

Design of educational interventions is typically carried out following a design cycle involving phases of investigation, conceptualization, prototyping, implementation, execution and evaluation. This cycle can be applied at different levels of granularity e.g. learning activity, module, course or programme.

In this paper we consider an aspect of learner behavior that can be critical to the success of many MOOCs i.e. their persistence to study, and the related theme of learner retention. We reflect on the impact that consideration of these can have on design decisions at different stages in the design cycle with the aim of en-hancing MOOC design in relation to learner persistence and retention, with particular attention to the European context.

Keywords

retention, persistence, learning design, representation, patterns

1 Introduction

Design of educational interventions is typically carried out following a design cycle involving phases of investigation, conceptualization, prototyping, implementation, execution and evaluation as shown in Figure 23 (Brasher & McAndrew, 2015) (and see e.g. Forest (2014) or Mor & Mogilevsky (2013) for examples of similar design cycles). This cycle can be applied at different levels of granularity e.g. learning activity, module, course or programme.

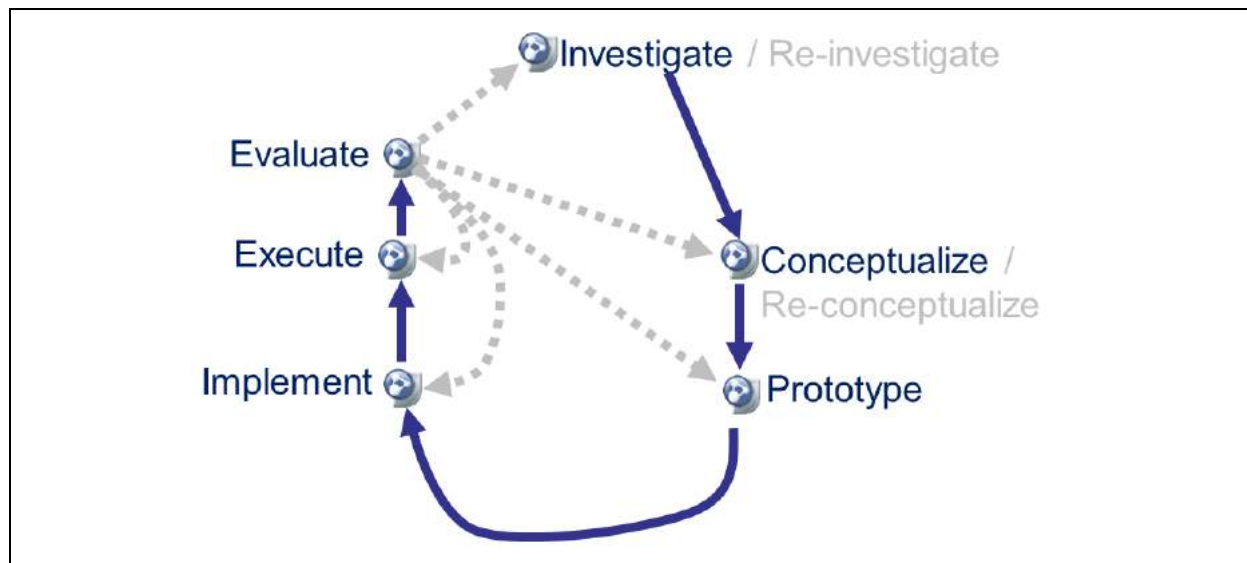


Figure 23: Learning design cycle

In this paper we consider an aspect of learner behaviour that can be critical to the success of many MOOCs i.e. their persistence to study, and the related themes of learner retention and dropout. We reflect on the impact that consideration of these can have on design decisions at different stages in the design cycle with the aim of enhancing MOOC design in relation to learner persistence and retention.

For the learning design cycle as a whole, and at each level of granularity there are common concepts for which services could be delivered to enhance and support the design of MOOCs, i.e. guidance, representation, and sharing (as identified in the Larnaca Declaration on Learning Design (Dalziel et al., 2013)). We use these concepts to identify and discuss services that could enhance MOOC design decisions e.g. guidance services, representation services and sharing services related to enhancing retention and persistence.

We present an overview of factors affecting persistence and retention in section 2, a summary of a typical learning design cycle in section 3, and outline our discussion of guidance, representation and sharing services in section 4, before summarising our findings in section 5.

2 Factors affecting persistence and retention

Definitions and terminology used to refer to the concepts of 'retention', 'persistence' and 'dropout' vary. For example a review of research on online course dropout by Lee and Choi (Lee & Choi, 2011) based on 35 empirical studies noted that 37% of the reviewed studies did not provide a clear definition of dropout and the remaining studies adopted divergent definitions. Some definitions focussed on voluntary withdrawal of students, others on non-completion of modules or programmes of study, yet others on a failure to complete a module with a certain grade or a failure to register on a further module or semester. Rovai developed a psychological model of persistence in online education by synthesizing models taking a variety of viewpoints (Rovai, 2003). He made use of work by Tinto (1975, 1987, 1993) and Bean and Metzner (1985) which examine factors affecting drop out from conventional face-to-face courses together with research in online student skills (Rowntree, 1995; Cole, 2000) and needs (Workman & Stenard, 1996) and the requirement to harmonize learning and teaching styles (Grow, 1996). Rovai's synthesis which aims at explaining student persistence in online distance education programs is shown in Figure 24.

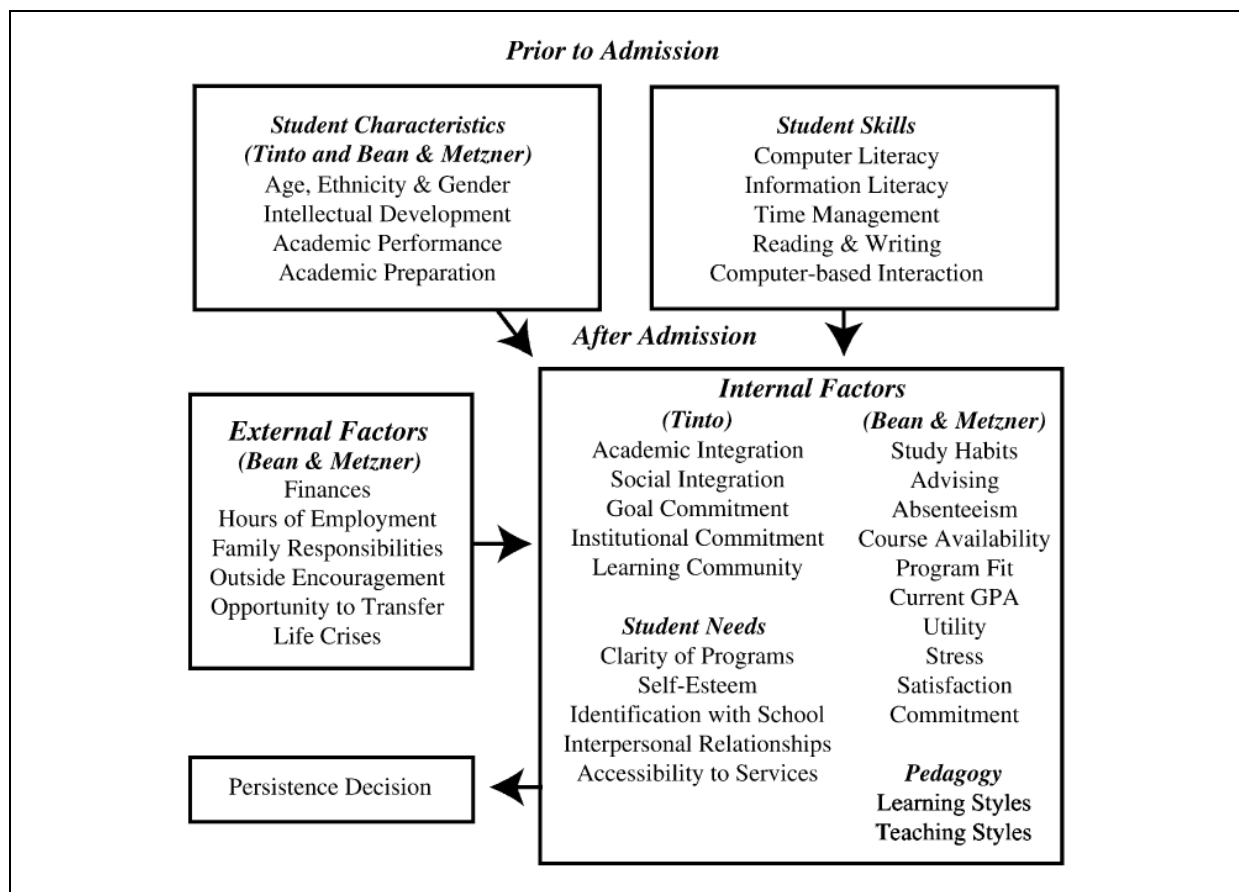


Figure 24: Rovai's composite persistence model

We note that the only some of the factors identified in Rovai's model are directly related to course design ('Pedagogy' & 'Teaching styles' in the lower right-hand corner), or can be influenced by course design (e.g. 'Satisfaction'). Similarly, Lee and Choi found 65 factors which were associated with dropout on distance education courses. They divided these factors into three categories: student factors, course / programme factors and environment factors, and place only two within a 'Course design' sub-category of the course / programme factors (Lee & Choi, 2011). Strategies to improve retention and persistence include interventions to enhance learners' academic integration, to enhance their motivation and goal commitment, and to support learners' social integration. Examples include timely and appropriate feedback, and promptly supporting struggling students (van Ameijde, 2015).

Turning our attention to MOOCs in particular, there have been reports of a variety of factors affecting retention and dropout, and from these some design implications may be inferred. Khalil & Ebner analysed data from 42 MOOCs with the aim of determine reasons for dropout or withdrawal i.e. non-completion of the MOOC in question, and to identify techniques to increase retention (Khalil & Ebner, 2014). Campbell et al (Campbell, Gibbs, Najafi, & Severinski, 2014) analysed 2 MOOCs and compared the characteristics of two categories of learners and their interactions. One category was those learners who took part in live sessions, the other was those who interacted with the MOOC material after it had been archived (i.e. they studied without instructional support, cohort presence, deadlines, and the potential for formal acknowledgement of completion). King et al (King et al., 2014) described the factors influencing the design of a particular MOOC, and reflect on the impact of these factors on retention. Jordan examined trends in enrolment and completion of MOOCs and found a significant negative correlation between completion rate and course length (Jordan, 2014). We

recognise that for MOOCs it can be that learners' engagement with a course is often more complex than merely 'retained' versus 'not retained'. For example, in Coursera MOOCs Kizilcec et al identified four clusters of learner behaviour (1 Sampling: learners explored some course videos; 2 Auditing: learners watched most videos, but completed assessments rarely; 3 Disengaging: learners reduced their engagement over time; 4 Completing: learners completed most assessments) (Kizilcec, Piech, & Schneider, 2013). Ferguson et al noted that not all of these four clusters of learner behaviour are present in other MOOCs, and that variations in pedagogy across MOOCs mean that other clusters of behaviour should be taken into account when considering strategies to maximise engagement (Ferguson et al., 2015).

In summary, some findings of interest from these MOOC articles are as follows:

- Retention was high when the subject was relevant to personal needs, e.g. dementia care
- Shorter courses generally have better retention rates
- Activity increases in the days when the weekly activities start and with reminders
- Intention is a key indicator of completion (those who intended to complete were 4.5 times more likely to do so than those who were browsing)
- Students who engage with any part of a MOOC are more likely to engage with other parts
- Intentions can change over a course
- The attrition pattern follows the same pattern for each group and over different lengths of course.

Absent from the reported analysis is much consideration of learning as a social activity. This is also reflected in a design approach that sees MOOCs as fundamentally self-directed learning and completion linked to individual motivation and persistence. However part of the concept of MOOCs lies in bringing together cohorts, often at massive scale. Establishing ways to show the presence and activity of that cohort through commentaries, discussions and peer actions raise the potential for social learning and Massive Open Social Learning approaches (e.g. as discussed in Sharples et al., 2014). This leads us to propose adding the design of this social dimension to the factors identified above.

The design implications that can be drawn from these findings are as follows:

- Choose subjects that relate to personal interests and needs, or frame subjects in this manner.
- Structure courses as a set of shorter courses that give students a sense of completion for each one.
- Structure activity with weekly starts and reminders.
- Design activities that can help influence student's intention, for example highlighting the interesting end point of a course early on.
- Provide bridges and stress links between course weeks.
- Get engagement (in anything) early on in a course.
- Focus on getting students to one third into the course, as dropout after this point is minimal.
- Provide capability to show social presence through identity and visible activity.

3 Learning design phases

Learning design is usually carried out in an iterative cycle as illustrated in Figure 23. This cycle can be applied at different levels e.g. learning activity, module, course or programme. As an example we describe how the design process can be applied at the activity level (Brasher & McAndrew, 2015).

Investigate: understanding the context

In this phase, learning designers investigate the educational context that they are designing for, so as to understand the implications of design decisions that they will take in later phases of the design cycle. They carry out activities in which they consider any technical, physical, temporal constraints that may exist, and reflect on the nature of the learners and teachers present in that context, so as to produce a set of guidelines for evaluating the designs that will be produced later on.

Conceptualize

Learning designers begin this phase by conceptualising the effects that their design is intended to have on their learners, e.g. the learning outcomes. They then describe their vision for solving their design problem for the context they are focusing on, using a storyboard technique. This storyboard is a first draft, and it may be modified during other stages in the design process.

Prototype

In this phase, learning designers will add details to the conceptualised vision to produce a prototype. The prototype is not the final product, but enough to clarify the functionality and technical issues for meeting the learners' requirements.

Implement

A runnable version of the activity is produced in a specific VLE, for a particular group of students and using a particular set of tools.

Evaluate

Evaluation is carried out using guidelines produced during the 'Investigate' phase. Typically, evaluations of design products produced at each stage in the design cycle will be carried out, enabling iterative improvement of the overall design.

4 Services for guidance, representation and sharing

The three core concepts of learning design identified by Dalziel et al are (1) guidance which "covers the many ways that educators can be assisted to think through their teaching and learning decision-making", (2) representation which involves frameworks for describing teaching and learning ideas, and (3) sharing, "the propagation of good teaching ideas from one educator to another" (Dalziel et al., 2013). In this section we outline existing services which can be used by learning designers to gather guidance, to support representation, and to engage in sharing at different stages of the learning design cycle. We note that many services will not fit cleanly into a single conceptual category as described by Dalziel et al, but will cross the boundaries between two (or more). In their descriptions of the categories, the authors acknowledge this, for example "In some cases guidance is incorporated into the representation (e.g., patterns), whereas in others it is a complement to the representation" (Dalziel et al., 2013). The three concepts are useful because they cover the functions that should exist to support learning design. For the sake of this paper we have placed each service within a single the concept that it fits, though we realise that many could be located so that they span boundaries between the concepts.

4.1 Guidance

Services that can provide guidance to leaning designers seeking to implement MOOCs already exist in various forms. For example, social networks such as Cloudworks (“a place to share, find and discuss learning and teaching ideas and experiences”, <http://cloudworks.ac.uk>; (Cloudworks, n.d.; Conole & Culver, 2010)). Cloudworks itself is not focused on retention in MOOCs, though postings on retention in general and related to MOOCs in particular do exist, and as Cloudworks is an open network, question can be asked by any learning designer wishing to explore the topic. There is also the potential of utilising learning analytics to provide detailed guidance to designers as discussed by Ferguson et al (Ferguson et al., 2015).

4.2 Representation

Representations relevant to learning designs can take many forms, at each phase of the learning design cycle, and each granularity.

At the “Investigate: understanding the context” design phase, personas can be used to represent typical learners, teachers (or other people who support learners with the aim of ensuring that the ensuing “Conceptualise” phase is carried out with a realistic impression of the characteristics of the learners and teachers who will be involved in the MOOC. Many open resources describing personas and how to use them are available (e.g. <http://cloudworks.ac.uk/cloudscape/view/2473>), but those available are not focused on the design problem of retention.

Pedagogical design patterns are a form of representing solutions to frequently occurring design problems. Alexander et al. (Alexander, Ishikawa, & Silverstein, 1977) introduced the idea of design patterns as ‘... a formula that describes a problem which occurs over and over again, and then the core of the solution to that problem, in such a way that you can use this solution a million times over, without ever doing it the same way twice’. During the “Conceptualise” phase, pedagogical patterns can be consulted, and if appropriate, applied to the design problem. Warburton and Mor describe a set of patterns they have collected to support the design of MOOCs (Warburton & Mor, 2015). Several of these are related to retention issues, including the patterns to develop a sense of trust in online social settings; this pattern can be considered as relevant to the ‘social integration’ factor in Tinto and Rovai’s models (Figure 24). All of the patterns collected by Warburton and Mor are available online, and those relevant to retention are listed here: <https://www.diigo.com/user/andrew-b/MOOC%20retention%20pattern>.

Representations to support prototyping of learning activities include the WebCollage tool for designing collaborative learning activities (D. Hernández-Leo, Asensio-Pérez, Dimitriadis, & Villasclaras, 2010). This tool can be used to prototype MOOC designs which implement and encourage the social features mentioned in section 2.

4.3 Sharing

We mentioned a social networking site for discussing and sharing design ideas earlier i.e. Cloudworks in section 4.1. There are also sites for sharing and collaboratively working on other forms of representation that can meet the needs of other phases in the learning design cycle. The prototype Learning Designer tool (Laurillard et al., 2013) enables teachers to share and review conceptual activity designs. One example which supports work at every phase in the design cycle is the METIS Integrated Learning Design Environment (Davinia Hernández-Leo, Asensio-Pérez, Derntl, Prieto, &

Chacón, 2014). This can be used by teams to share design artefacts relevant to every stage of the design process, including artefacts targeted at improving retention.

5 Discussion and conclusions

The open approach that underlies MOOCs and open education could be seen to have inevitable issues of lower engagement and persistence from those that use them. Indeed the research that has been examined and discussed in section 2 highlights many factors that are likely to remain outside of the control of those providing the MOOC. However it is important to understand those aspects that can be incorporated into the learning design and overall approach that is adopted. We advocate in this paper the adoption of a learning design process and have shown the value of this through both workshops that encourage the stages in design to be considered, discussed and represented, and also in more formal processes now in use at The Open University (Cross, Galley, Brasher, & Weller, 2012). Related to learning design is the use of learning analytics so that suitable measures can be put in place to look at the metrics of performance, satisfaction and completion that are needed. Closing this connection between design and analytics (Clow, 2012) allows design decisions to be modelled and can lead to improvements and sharing of approaches. Such research is starting to show the value of bringing in social approaches and thinking through the meaning of persistence for open education.

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Shared Educational Services for the development MOOCs, a proposal for a European collaboration.

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Abstract

It is a form of education that provides an opportunity for everyone who wants to, to learn conducting massive, open and free courses, offered mainly by universities, but also by other organizations, through educational Internet platforms. The philosophy is releasing this knowledge to reach a wider audience.

Under this premise, many efforts being made in different environments, public and private, to develop and implement digital education in the new model of development and implementation of MOOCs and is being adopted by numerous training and educational institutions, multiple universities, official institutions, etc. It is being one of the main innovative ways to conduct virtual training programs in higher education are the MOOCs.

Despite this perspective, too, as all emerging phenomenon has many detractors, who emphasize its drawbacks and weaknesses above their advantages and strengths.

Keywords

Educational services, shared educational services, design MOOCs, common resources, common services MOOC

1 Starting point

Starting from the main objective of Project HOME, "Develop and strengthen an open network for European cooperation in education and MOOCs based on values such as openness, equity, quality and diversity" is necessary to know what are the implications, needs and general considerations each institution, school or association must take into account to perform a MOOC.

These aspects (educational) are crucial for the development of a MOOC within and between different institutions or centers. Identify them, know them and controlling them could favor the possibility of carrying out an optimized development and higher quality. MOOCs implement collective and groups,

sharing (educational or not) services you can avoid duplication, unnecessary costs, and better use of common resources will be enhanced, operationalize work and lower costs.

In our case we will focus on shared educational services. Based on that to design and develop a MOOC are many considerations of educational, pedagogical, didactic or methodology, to be taken into account. Therefore, we need an analysis of the entire process of creating a MOOC, from the time the teacher gets a pen and paper and capture his first idea for the course, until the last when planning how to evaluate an activity.

The determination of what may be the most appropriate and interesting shared basic educational services, have been given by the views and opinions of HOME project partners. This has been a reference point from which to start work on the subject. This, together with the analysis of documents, reports and scientific publications, we have come to build what could be considered a potentially useful basic structure of services for any European consortium, in order to develop MOOCs independently or in collaboration, improve and facilitate the work, and streamline the process of design, construction and installation of MOOCs.

It is at this point that we must ask how can accompany the journey to the services of common advice, training, support, information, research, additional resources and technologies available to all teachers or creators of MOOCs can get help, support and information so that they can record their videos, manage their networks, consult and answer your questions easily, etc.

This is the objective to be pursued by a European consortium of companies, educational institutions and other entities in collaboration to manage, create, design and deliver MOOCs under one paradigm, but with different academic perspectives, guidelines and practices personalities.

2 The MOOCs from the European perspective

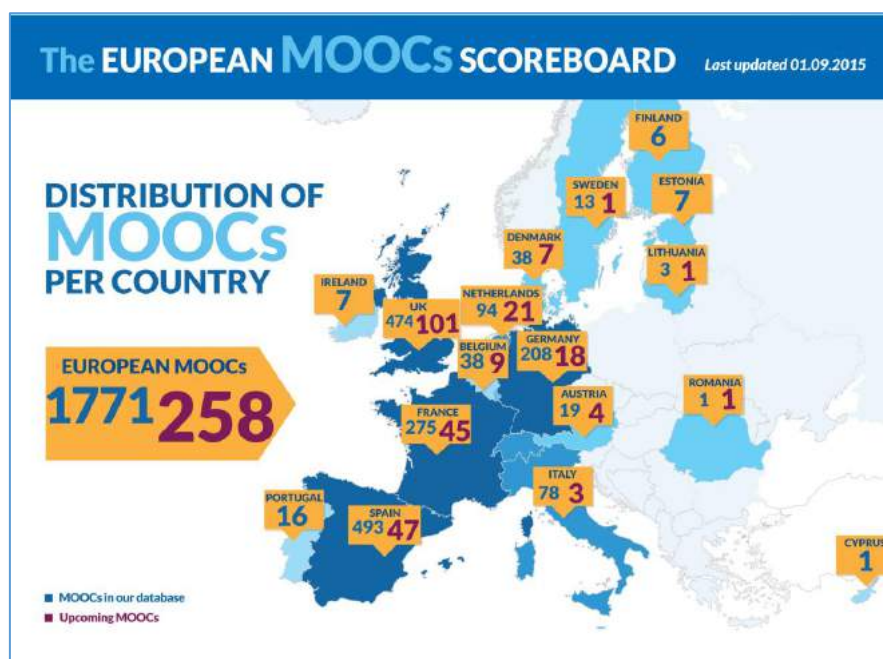
Europe compared to the United States, is becoming a force in the development and implementation of MOOCs. Given the rapid expansion of MOOCs in the latter, the European Union has responded by designing learning experiences adapted to our reality, seeking to develop its own model of open training. This model is based on the promotion of research, study and debate on the MOOC, and promotes projects that different open to existing training platforms are developed. These projects and learning experiences are based on the diversity of academic traditions of our universities and language that characterize the European continent.

This diversity of educational models, as it underpins professor at the National University of Singapore, Tan Chorh Chuan (Agarwal, A.; Chorh Chuan, T.; Jackson, S. A.; Mourshed, M.; 2015) is a question that must be encouraged, since differentiation helps equip educators with more flexible to adapt to the unpredictability of education in the future forms.

We have seen, at European level, spaces for reflection and research, international projects for the development and implementation of courses using different platforms and existing proprietary or open spaces where open resources come for common use, observatories and spetal analyzes. This reflects what is considered more necessary for the future development of education in which a "collaborative effort with universities, companies and governments to work together more efficiently use and linking capabilities will be necessary advanced information technology, communications and networks" (Agarwal, A.; Chorh Chuan, T.; Jackson, S. A.; Mourshed, M.; 2015).

Given the above, stands out as a space for reflection and analysis repository of Education Open Europe (openeducationeuropa.eu), an initiative of the European Commission, a portal of open

educational resources in Europe, through which you can check all information on all resources related to MOOCs that may be of interest to students, teachers, researchers and professionals. This site offers current figures on MOOCs that are taught today in Europe through numerous universities.



Source: Open Education Europa

http://openeducationeuropa.eu/en/open_education_scoreboard

As you can see in the picture above, many countries already have to its credit two or more years of teaching across multiple platforms. Dutch universities such as Leiden, Open Universiteit Amsterdam not only collaborate with US platforms like Coursera, Edx, ... but also OpenUpEd. Italy has a great diversity in terms of platforms, some work with OpenUpEd, other universities have their own platforms, and even the Bocconi University has a laboratory dedicated to research in MOOCs. OpenUpEd. Spain develops its courses through the MiriadaX platform, which was launched in January 2013 and is aimed primarily at Spanish-speaking countries (Spain and Latin America), and has many courses, growing at a breakneck pace.

The UK also has a new MOOC platform, FutureLearn. . Founded by the Open University in December 2012, it has partnered with 21 universities in the UK and the Republic of Ireland, including Kings College London and Trinity College Dublin, and prominent British cultural institutions. In Germany, Iversity was founded in 2008 as a platform for academic collaboration and was established in 2011. The company changed its focus to become a provider MOOC in 2012 and is the first MOOC platform hold a European Fellowship MOOC Competition. Iversity, headed by CEO Marcus Riecke and CMO Hannes Klöpper, will launch courses taught by specialists from the German, Italian and Spanish universities, including Professor Christian Spannagel at the University of Heidelberg Education.

This profile reflects the image described by Stephen Downes (2010), which was to offer a number of ideas of how would the future of education; and speaking of educational institutions, he indicated that "Educational institutions will need more and more to think of themselves as part of a larger system, and as their offerings as entities that will become a part of, and interact with, the larger environment".

Among others, highlights the EMA (European MOOC multiple aggregator) (platform.europeanmoocs.eu), which brings together eight universities and four companies, a project which aims to provide multilingual MOOC courses in eight languages through a proprietary technology that allows the courses offered translation into different languages.

On the other hand, is the ECCO (Elearning, and Open Data Communication) project, led by UNED and has over 20 universities and companies from 7 countries, with each member university their own platform.

Of course, we are Project HOME (online Higher Education: MOOCs the European way), under the umbrella of the European Commission, the Lifelong Learning Programme and EADTU, we aim to develop and strengthen an open open network for European cooperation in education in general, and MOOCs in particular. The platform we use is OpenUpEd. Launched in April 2013 and with the support of the European Commission, which has 60 free courses in 10 languages with universities in France, UK, Lithuania, Netherlands, Slovakia, and the countries of southern Europe such as Portugal, Spain and Italy. It is also associated with universities outside the European Union, including Russia, Turkey and Israel, and plans to work with institutions of Cyprus, Scandinavia (Denmark specifically), Estonia, Greece, Poland and Slovenia. There are other multinational initiatives to promote MOOCs in Europe in collaboration between universities EuroTech.

There is MOOC participation elsewhere in the DACH-region, in Austria and Switzerland, notably with the Vienna University of Technology and ETH Zurich respectively. Universities and institutions in Denmark, Ireland, Portugal, Finland, France, and Belgium are also involved in MOOC production. Universities from these countries either applied to the Iversity MOOC fellowship, have partnerships with large platforms like edX, Coursera, or Udacity, have their own MOOC platforms (like the University of Amsterdam), or work with other platforms like Moodle.

This brief review gives us a vision of a European Union active, innovative and working hard in the world of MOOCs to lead and take the initiative in an open training quality and competitive.

3 Implications and considerations for conducting a MOOC. Critical design variables

When designing and building a MOOC is taken into account a number of key considerations seeking results in a MOOC / S quality. There are many considerations that must be calculated and the work to prepare the structure, content, channels, media, professionals involved, the recruitment of students, among others.

Meditate on how it has to present a MOOC is an essential element. We must make the course attractive to the student, capturing their attention and presenting the content to work in a clear and attractive way. In many cases, those responsible for creating and developing a MOOC, think it is enough to get a webcam with your library after them. That's virtual education of lower quality. After analyzing various courses on different platforms (Coursera, edX, MiriadaX, Udacity, Udemy), we can draw a number of general characteristics that adorn most of the courses analyzed and can set the model design MOOCs defined by:

- To be developed on a specific platform.
- Include videoconferencing as a means of transmission of content and communication with students.
- Include educational videos explaining the content to work.
- Implement different types of evaluation

- Questionnaires self-correction and automatic result.
- Among peers.
- Include support teaching materials in different formats (Word, pdf, ppt, avi...)
- Enable spaces for discussion and dialogue forums.
- The little or no restraint on the part of teachers / tutors.
- The granting of partial badges and a final certificate when the course is completed after payment of a certain amount.
- Being fixed term and are organized in modules or weeks, ranging opening sequence.

Then, from what seen so far, we collect the main issues to consider when designing and creating a MOOC. This reflection will show us the process and extrapolate precisely which are the most appropriate actions to be performed and which ultimately are the educational services that may be common and shared between different institutions, centers or associations in a potential European consortium.

We can establish that the above characteristics raisins to form a number of variables, from the structure created by Julio Cabero Almenara (2006), presented in the figure below. They are critical or essential variables to consider in the design and development of a MOOC. All are important and have their place in the design and implementation process itself.

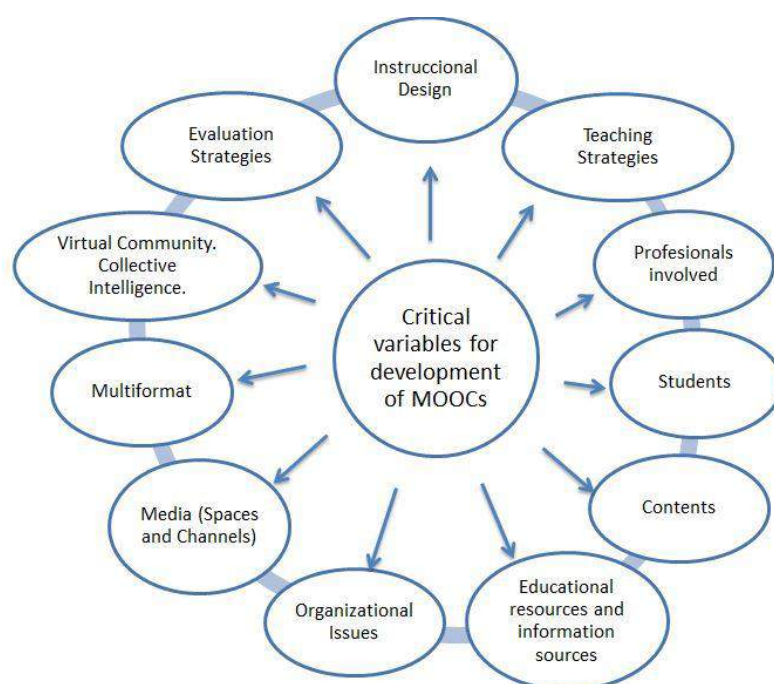


Figure 1: Critical variables for development of MOOCs. Produced by Lourdes Pérez Sánchez (Adapted from Cabero Almenara 2006).

3.1. Curriculum or course planning

The configuration and structure of a MOOC have to present a number of basic elements that will promote a better understanding of the functioning and development of it by students. This function is performed through curriculum design, which facilitates the teacher or teaching team arrange, structure, organize and work in the training process online.

In this section, we find planning in which the course structure is established, the burden of student work, definition of content to work or to use different methodologies for evaluation.

In this sense, the instructional design and course planning is becoming a key element in the design and organization prior to its development MOOC.

The design MOOC relies, increasingly, on the progress of modern pedagogy, learning theories, models on how to learn, how learning is evaluated and, increasingly also supported instructional design (Weller, 2013).

This information will be organized by the teaching team, and if possible be reckoned with advice and technical support for the design and creation of content and pedagogical advice to foster a quality instructional design.

The instructional design involves the support on which the whole structure and course development will be supported, thus requiring special attention, and careful planning. As stated Méndez García, C. (2015) in his article, "improvisation is erased from the vocabulary of the designer and teacher MOOC. Instead, you can, to some extent, speak of flexibility to manage different issues that arise inevitably during the development of the course".

3.2. Teaching Strategies

Pre form, the approach of the course must be planned and designed to encourage participation, collaboration and facilitate the process of teaching and learning.

Regarding the development of MOOC, it must seek to carry out active, participatory and interactive methodological strategies between students / teachers and pupils / students, putting toolkit and resources that facilitate: accessible content (in different formats and attractive), tracking guides, consultation documents , extension, forums, social networking spaces, spaces for consultation, evaluation, among others.

It also has to be a thoughtful, collaborative and creative methodology, trying to encourage critical reading of the contents, activities for critical and thoughtful, collaborative and creative analysis of them and decision-making for the implementation of activities consensually and group. All this, trying to enrich both the learning process and the results obtained. Students must not only acquire a number of specific knowledge, but a series of practical skills and competencies court (communicative, technological, analytical) that allow them to improve their competence baggage.

3.3. Professionals involved

Professionals involved in the design, development and implementation of a MOOC are very diverse and that could be grouped into three broad areas:

- *Management and Administration:* responsible for managing all matters relating to expenses, contracts, services, platform, personnel, etc. They must be in charge of tasks such as advertising, dissemination of MOOCs, the universities themselves, marketing, ultimately, attracting more students.
- *Technical:* group of people responsible for maintaining the platform, management, problem solving, student enrollment, opening and closing courses, certifications, address concerns raised by teachers that implement courses on the platform or support teachers in the development of materials (videos, documents, video conferencing, video classes or forums).
- *Teachers:* they are responsible for designing, developing and implementing the course through the platform. Among the professionals who are part of the team that designs and builds the MOOC, you can find very different profiles, teacher, designer, technician, the

teacher, the moderator, counselor or assessor. In many cases these profiles converge in one person, demanding that has so far been only teaching, some skills and abilities that go beyond tasks merely teachers and curriculum design, content, activities, evaluations, among the most basic.

We can realize even more. The teacher who designs, creates and implements a MOOC is to play very different roles during the development of the course. Among others (Zabala: 2015, pp 21-25.):

- Instructional Designer.
- Manager platform: involved in the management and administration of the platform in all matters relating to his/her course/s.
- Creator of contents: pedagogical design of elearning content development of multimedia scripts, creating learning resources, designer assessment activities, compilation of quality materials and judiciously, etc.
- Tutor and counselor: Attentive to the resolution of doubts and questions raised by students in relation to the content to work along the course.
- Moderator of communication and meeting spaces (forums, chats and videoconferencing): is the person in charge of taking the pulse of the teaching-learning process, answer questions and guide the discussions.

3.4. Students

At this point, we must bear in mind that when carrying out a MOOC we can find a huge number of students, an issue that can greatly limit a personalized and detailed attention.

As was seen in the study by MIT and Harvard University on 68 MOOCs with 1.7 million users, over two years, they were elected by a very large user type. For short, these users had the following characteristics (MIT News, 2015):

- 39% of users are seeking teachers and make productive use of MOOC chosen.
- It took place increased participation of women and older adults.
- It was noted that half of those registered were unclear if they would get to the end of the course certification.
- Often a large number of users connected once during the course was recorded.
- The number of students increased in those courses that allow users to participate in an extended period (may be even a year) at their own pace, rather than mark time more defined milestones, and to complete it and finish at any time.
- When the user chooses the course requiring payment of a tuition or enrollment, training often end almost 60%

This leads us to think that it might be appropriate to specialize and target more specific groups MOOC in order to provide a more adequate, specialized and specific training. This is a reflection and assessment to be made from the faculty and from the institution or entity responsible. Therefore has to take into account, when designing the MOOC potential user profile, it can be determined by many different criteria:

- Level training.
- Professional.
- Gender.
- Age.
- Interest.
- Career goals.
- Specific Specialization.

Likewise, we must take into account the "different motivations of students, their different level of interest and commitment to the course" (Méndez García, C .; 2015).

3.5. Contents

The teaching team is responsible for defining, selecting and developing the course content taught. Imbernon, Silva and Guzmán (2011) established among the main tasks of teachers, among others, of "*• Dominate the function and purpose of the tools and resources of ICT (multimedia, editing tools, software "for publications and web design tools) and use them to help students to innovate and strengthen their learning. • Develop online material that contributes to a deepening understanding of the essential concepts by students and their application to solving real life problems.*"

In addition, it has to find it different, attractive, accessible formats, structured in modules or weeks, which gradually and sequenced are opened and developed based on the proposed objectives for the activity, module or sequence content.

The Conference of Rectors of Spanish Universities (Gea, M .; 2015) established as necessary "Check that the contents of the online courses are accessible with different devices and browsers, and also, the material is provided adapted to students with some disability or learning difficulty."

The contents included in these courses can take many forms, including, inter alia as stated Zapata-Ros (2015), "Documents (PDF, doc, etc.), thematic video, video conference, other videos, readings document or book printed, PPTs, web links, forums, etc."

CRUE (Gea, M .; 2015) establishes a series of criteria for the integrity and quality of the contents:

- hypertextuality,
- multimedia,
- interactivity (if the contents are presented in a hypertext, if they favor interactivity, ...).
- any criteria or methods for sequencing content is used.
- quality audiovisual materials: speech, style, language, variety, visual and dynamic aspects.
- various teaching resources (multimedia, interactive, open, ...) related to the different learning paths are used.

These contents are usually supported by an educational guide that serves as a constant reference for student support and in which the entire structure of the course is collected and solves any doubt that this has on the monitoring of the course (structure, sequencing, dates, activities, evaluations, forums, tutors, etc.), and provides them with accurate information of the process to be followed throughout the process of formation of the course. According to Zapata-Ros (2015), the tutorial of the unit is the main document for the student to know which place is at all times in its progress towards the goals.

3.6. Resources and information sources

They have to use Open Educational Resources (OER), with different formats like text, concept maps, images, graphics, audio, video, etc.

The teacher uses this range of sources to develop contents and provide additional resources to users. In a way, it is playing the role of *Content Curator* selecting the most appropriate content for the course and for their students, using search engines, databases, magazines, libraries, audio channels, video channels, etc., in order to create content, add to or supplement them.

Already in 2009, Rohit Bhargava (quoted in Marquina, J. ; 2013) developed a document about what causes a person to find, organize and share the most relevant content for a certain group of people. In that document, he said that "the future of the social web will be driven by content curator, who were responsible to collect and share the best content online for others to consume and assume the role of editors to conduct and publish compilations content created by third parties".

Likewise, when selecting materials, resources and information, keep a couple of considerations:

- "If you plan to use copyrighted materials you must have the appropriate permits and licenses. If not consider the search for alternatives, manage new permits, use materials CC license or Open Access, or create their own materials.
 - The materials must be referenced in the order they are to be used associated objectives and to activities in the tutorial. Should be reviewed, pages or slides to be used in concrete
- "(Zapata-Ros, 2015).

In this sense, the teacher has to play as a true expert documentarian, understood in copyright, types of documentary sources, documentary quality criteria or types of materials and educational content.

3.7. Media (Spaces and Channels)

Spaces and communication channels to use are varied. We can distinguish basically between two spaces.

On the one hand, Social Networks. A MOOC has to go hand in hand these networks. The greater the presence in social networks coordinators and teachers, the greater the chances that the MOOC reach the target audience, thus fulfilling the function of dissemination and expansion of the course itself.

Social networks are structures with a strong and innovative potential for networking, and that can become learning communities or knowledge.

More and more educators who are experiencing the benefits of using social media in the classroom. Since the creation of school pages on Facebook to connect students with experts through Twitter, social networks have become ingrained as learning tools at the same level as traditional tools

The results obtained in an investigation conducted by the University of the País Vasco (Spain) on the use of social networks in a MOOC, revealed that social networks were considered by students as a positive and influential factor in academic performance and rates of student success. (Brown, C. et al, 2015).

Moreover, the MOOCs have the Forums as spaces of communication. Here they are more internal and develop within the platform itself. They are designed for communication between students and between them and teachers, who may or may not have their attention, and often attended and responded peer.

Due to the high number of students, management and care forums becomes an almost impossible task by the teacher, which can have negative consequences on the development of the course. According to Mendez, C. (2013) "The use of forums, very useful for certain participants, can not be converted, for example, in the only tool evaluation and monitoring of the course, since it is very difficult for a student who is connected only twice a week to the course, for example, keep up a forum with normal activity. "

They used an appropriate way, are very useful tools for the development and enhancement of a range of skills and competencies, among which we can mention the following: Independent learning ability; Being able to communicate interactively with heterogeneous social groups; Teamwork; Autonomously generate knowledge and a group, and share; Capacity analysis, reflection and deduction based on actual social facts; Finding solutions or research capacity (Rychen, D. S. and Salganik, H .; 2000).

Therefore, management and finding a way to implement the MOOC with both communication channels, must be a key objective to be achieved by the / the teacher / s and course manager.

3.8. Organizational Issues

As we include in the section of professionals involved in the process, there is a section dedicated to the Administration or Administrative Management which holds everything related to issues of a more bureaucratic on the creation and development rests the MOOCs. We highlight:

- Recruitment platform.
- Recruitment of maintenance.
- Collection and management students.
- Contracts.
- Expense Management.
- Personnel management.
- Service Management.
- Dissemination and marketing.

These elements provide cover the development and implementation of the course, without which it could not cope.

3.9. Multi format

When presenting the contents it is done in many different ways. The basic or compulsory content is often presented in the form of prerecorded video conference by the expert teachers in the field (of a duration of between 2 and 10 minutes) supported by a visual presentation. This presentation is also available in a downloadable PDF document.

In addition, we can find additional material in different formats such as book chapters, articles, introductory videos, links to web pages with extra content, position papers, etc.

In previous points already it made reference to the various formats in which the content to work in the courses can be presented.

To this should be added, the possibility of using channels and spaces to share and hang documents and different resources Scop.it, Diigo, Wikispaces, Slideshare, Issuu, Youtube, ..., parallel and external to MOOC itself.

3.10. Comunidad Virtual

During the course it involves communication actions generate and foster the spirit of community, dialogue and collaboration, thus creating what is called Virtual Community develop.

The result of a study carried out by the UOC (Univeritat Oberta de Catalunya) (Buzo, Z. and Imbernon, F. ; 2009) analyzed these communities, and concluded that the following are the most common features:

1. Loyalty.
2. Commitment.
3. Participation.
4. Common Interests.
5. Ability to influence the design and composition of space in which the activities take place.
6. Sense of belonging.
7. Signs of external identity.
8. Identity. Members of the Community can not be anonymous.
9. Multidirectional relations.

In order to complete the above items, we hear Gairín, J. (2006), which in its article "The structure and operation of a Virtual Learning Community" must satisfy a number of specific conditions, such as:

- "The goals should be shared among its members
- Results must be focused and must have orientation
- Equity participation for all members
- The rules must be mutually negotiated
- should facilitate collaborative learning and teamwork
- It must produce the active creation of knowledge
- should produce interaction and feedback."

Taking these factors into account and following Onrubia (2005) learning communities, "are contexts in which students learn through participation and involvement, in collaboration with the teacher and other students in genuine research processes and construction collective knowledge about personally and socially relevant issues."

The best of a MOOC is precisely this conversational space that is generated beyond the textual or audiovisual content, promoting the construction of the virtual learning community.

3.11. Evaluaciones

The issue of evaluation is one of the most complicated in a MOOC. The high number of students severely limits the types of activities to be undertaken to carry out various assessments. Typically, two types of evaluations are performed:

- Evaluation with automatic results through a questionnaire.
- Peer evaluations. "Making each work is evaluated by two or three students, randomly chosen, so that at the end of a course, for example, each student has been evaluated by six or ten students, depending on the total number of tasks. These numbers give sufficient guarantee of objectivity to the process of peer review and can help the teacher or course designer to anxiety is reduced to waive the assessment of all work on your part and leave it in the hands of students "(Méndez García, C .; 2015).

While it is true, this is one of the most controversial issues and more are being studied in relation to MOOCs, as is being considered that the assessment can be one of the key elements to improve the completion rate of this type of course .

There are many types of assessment methodologies that could be included in a MOOC. The Sánchez and Escribano (2014) alutores have systematized a ratio of types of assessments that can become part of the assessment in MOOCs. Among others we include the following:

- Based in automation Tools: multiple choice test, automatic evaluation of problem sets and programming tasks.
- Based on authority Tools: seminars, workshops, practical examinations, interviews, debates, co-evaluation of activities in the MOOCs, ...
- Based on social interaction tools: ana, portfolio, wiki, gamification, and questionnaire surveys, discussion forums, workshops, assignments, exercises and activities or projects.

Moreover, in some cases they made final Practices of various kinds to close the course and as the umbrella of knowledge acquired throughout the course.

4 Lines of action necessary for the implementation of a MOOC

As we said at the beginning of this document, the search for common services for the development of MOOCs basically pursues economic efficiency, the use of resources and collaboration between centers. In this regard, we propose a series of lines of action to be transported through the different variables collected before and that will give us the way forward to set up a series of services to be shared between the different entities that make up the consortium HOME.

Regarding the Instructional Design and Teaching Strategies is necessary to take a number of measures that seek to improve how to make a MOOC, how to deliver it, ..., namely:

- Share among members of the consortium how it designs, develops and implements a MOOC.
- Create a database of good practices with successful MOOCs.
- Improve the quality of instructional design through training pills, courses, etc.

- Teach implement a MOOC from the educational point of view.
- Promote and conduct joint research for improvement of virtual education.

Regarding the personnel involved in the design and development MOOCs are several lines of action that can be carried out collaborative way, both from an academic point of view as technical, and administrative. Then collect the equipment on teachers leaving the other two categories for the section devoted to organizational issues:

- Collaboration between teachers team similar areas of different universities.
- Create professional teaching and research networks.
- Unify and personal resources group based specialties.
- Develop joint courses.
- Coordination between degrees and postgraduate degrees from different universities to coordinate MOOCs.

You need to have a better understanding of student. The MOOC currently offered are offered to the general public. Perhaps the target audience interested focus of our courses more defining the user profile to which we are headed. Also, you have to increase actions to attract more students to our courses.

The contents to be taught are considered one of the most important in a training action elements. The lines of action that can attest to this question may be:

- Give the necessary quality and variety to the content.
- Provide compelling content.
- Be able to conduct a variety of content formats.
- Make content accessible.
- Have the necessary technical support to advise the teaching staff in the process of developing the content.
- Share content with other universities.

Educational resources and sources of information are the basis of the course contents. It is essential that researchers and teachers have a clear set of quality criteria when selecting them and work them before including them as contained in the courses.

- Know the quality criteria for optimal selection of information.
- Have basic knowledge of document management.
- To provide technical support for the search for information.
- Share information and resources with other teachers from other universities.

As for the organizational aspects we can define them, as we indicated before, such as those relating to administrative and technical issues. They are those actions concerning purely efforts aimed at:

- Economic efficiency.
- Marketing strategies.
- Development of student recruitment strategies.
- Strategies broadcast on different channels. Greater visibility.
- Internationalization of MOOCs offer.
- Management platform.
- Technical support teaching teams.

- Administrative management for teachers and students.
- Management fees and certifications.

As we saw in section dedicated to the critical variables, social networks and communication channels are configured as essential for communication, dissemination and building the image of both teachers of the educational offer of schools, as the institutions and institutions themselves. The actions to be carried out so can go on line:

- Creating and managing social networks for each college.
- Creating and managing social networks to promote the MOOCs
- Creating and managing social networks to promote the platform HOME.
- Promote the image of teachers.
- Channels of communication with students.
- Showcase professionals.

The variety in how you can present the content is determined by the different types of formats that can be used and can provide text documents, audio, video, links to web pages, games, puzzles, solve problems

The use of different materials and content formats offer a more innovative and attractive image to the course. While it is true, used this resource in excess, it can be burdensome and even annoying. To achieve the use of appropriate formats in perspective we can:

- Knowing adequately the different types of existing formats and possibilities.
- Having the right technical advice.
- Having the right educational advice for use.

The Virtual Community is the result of collaborative work of course users. They work together, discuss, reflect and learn together. Of these learning experiences is sought:

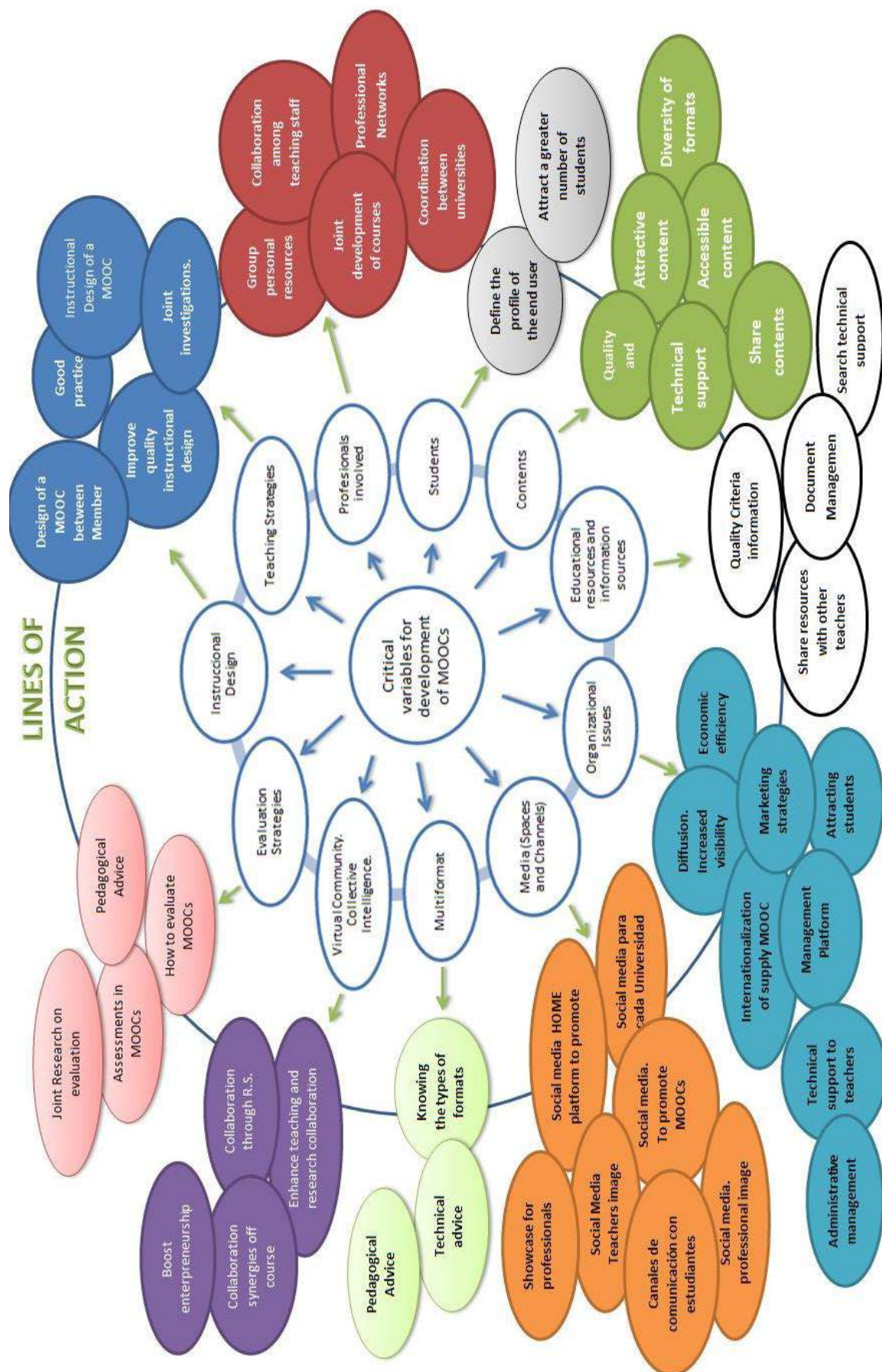
- Strengthen the teaching and research collaboration.
- Generate synergies of collaboration beyond the course.
- Channeling this collaboration through social networks.
- Promote entrepreneurship (creation of spin-off).

Finally, the evaluation strategies are established as the strongest weapons to assess how they are developing training processes in any form and model. In our case we talk about MOOCs, therefore, we must know how we should include in their assessment strategies for our students, but also how to evaluate MOOCs own. Therefore, the lines of action in this regard are:

- How to evaluate MOOCs.
- Activities for assessments within the MOOCs.
- Educational Consulting to conduct the evaluation.
- Implement joint research on evaluation systems.

We include below a figure that includes graphically all lines of action.

Figure 2: Critical variables for development of MOOCs. Lines of action. Produced by Lourdes Pérez Sánchez



5 Educational needs and shared services

The lines of action seen so far in detail can understand the main tasks to perform in a series of services. Many of them can be performed on a shared basis creating a solid and rich structure services and supports that will support a training and creation of common MOOCs.

5.1 Support and educational advice

As we have seen in many of the moments during construction of a MOOC and lines of action surrounding this process, it becomes necessary advice and pedagogical and educational support to help the teacher or teaching team in tasks such as:

- Instructional Design.
- Selecting the most appropriate teaching strategy.
- The sequence of contents.
- The methodology.
- The evaluation system.

We must bear in mind that many teachers are in a process of transition between the world of the virtual teaching classroom teaching and encounter some difficult hurdles to overcome. The teacher advisor in addition to the seen, has to help tailor your face has an eminently virtual methodology, where the perception of the teaching-learning methodology change completely.

Likewise, teachers teams have to face training process and digital upgrade, to catch up in terms of management of office software, software for handling audio, video, text documents, etc., in order to provide content:

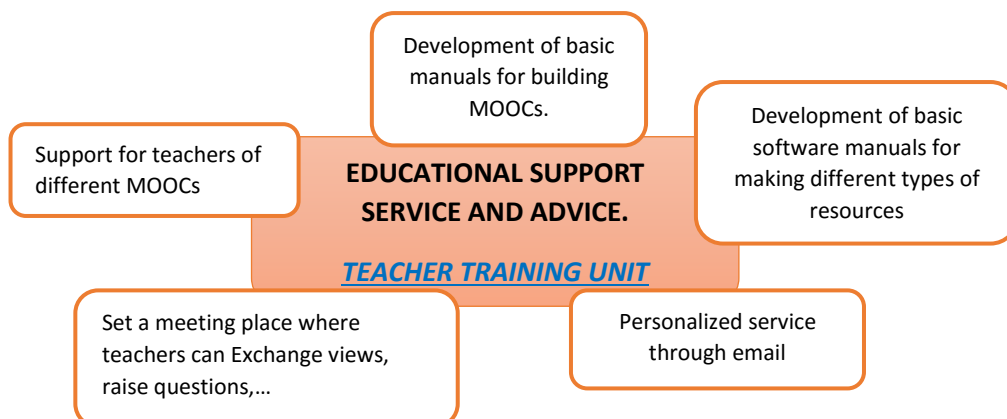
- With more quality
- With more variety.
- More accessible.
- More attractive.

Moreover, with the advent of the Internet, teachers of the century, were increased sources greatly, but also had to refine much their criteria when selecting the sources of information from which to collect documentation to work and to offer its students.

Many have been forced to acquire training in document management in information quality criteria, etc. Also, in many cases, the large amount of information overwhelms us so much that difficult for us to find what we are really looking for what eventually need help.

Social networks have been presented to us as a real challenge and a challenge of how to use them in education. It is at that point where an educational adviser can play an important role.

Show the potential of evaluation is essential for optimum results in a course. Not only by the teacher of student work, but student opinion on various aspects of the course to improve in the future.



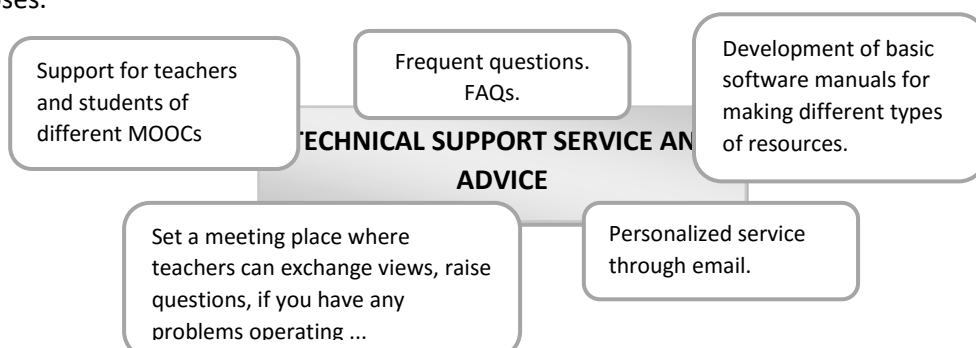
*Figure 3: Lines of action for the educational support services and advice.
Produced by Lourdes Pérez Sánchez.*

As you can see in the picture are included **Teacher Training Unit**. It is considered essential to improve the development of courses enhance the training of teachers at those points where more vulnerable relating sits virtual teaching. You can generate a range of courses online diverse, read:

- Digital Update.
- Basic Office.
- Basic Software (creating videos, podcasts, pdf.).
- Using the Open Platform
- Management Forum.
- Social networks.
- Document management.
- Quality criteria in sources of information
- Instructional Design.

5.2 Technical support and advice

It is in line with what was stated in the previous point, but with a more technical nature. Anything that requires resolve doubts about the functionality of any software, platform, some application, some resources included in the course, some content offered does not work as it should, etc., will be the technical advisor to the need to solve the problem, whether he puts the teacher as if the student poses.



*Figure 4: Lines of action for the technical support services and advice.
Produced by Lourdes Pérez Sánchez.*

5.3 Repository; Share resources

In this section, we can include a range of both personal and material resources that can be used by different entities and individuals. In order to be more operational and cost saving, they can be put together materials, personal, multi-platform, sources of information, content, software, etc. courses resources, and, of course, share the virtual learning platform.

To carry out this idea can build a repository of resources managed by a technician which give access to interested teachers belonging to the member universities of the consortium, will qualify based on a number of criteria previously determined by a commission, and may be updated by any member of the consortium.

And also as the ultimate goal, it increases the visibility and impact of the work done.

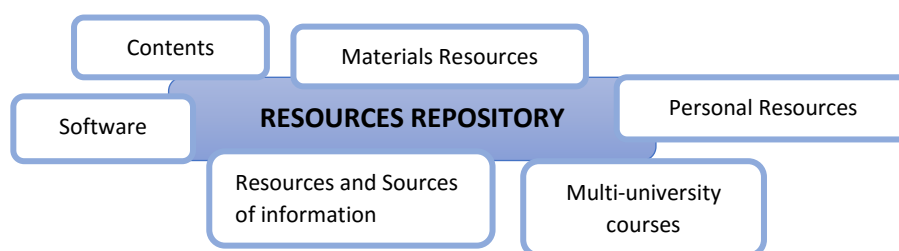


Figure 5: Lines of action for the Resources repository.

Produced by Lourdes Pérez Sánchez.

5.4 Observatory Consortium

May assess the possibility of designing and creating an observatory on monitoring the work done within the consortium, and the possibilities for the future, how you can continue autonomously, how to get funding, etc.

We will offer the possibility of bringing together all the information on the nuclear issue of the project, concerning members, courses that are being made, how it will operate the work and how they can follow, what impact has and can achieve greater dissemination gather all updated on the subject of the MOOC information, especially that which is considered of interest.

This observatory will lead to a focal point very topical, promoting employment and entrepreneurship of graduates of universities of the consortium members.

5.5 Management platform and common learning

How could it be otherwise, one of the fundamental shared educational services must be the virtual learning platform.

This platform brings together, under an initial interface, offering all courses will be taught by universities who wish to do so. the institution, the language, the cost (if available), credits, hours of dedication, number of modules, technical requirements if you had, etc. shall be indicated.

The platform should be simple, navigable, accessible and attractive. Which enables teachers the tools to create and design the course to suit incorporating all the elements it deems appropriate (documents, instructions, videos, images, ads, forums, ...), in a quick and convenient tools.

5.6 Research team

Given that we are in a changing world, and that the process of education in the virtual world, it is even more, we must consider the option to investigate these processes and these changes, share knowledge, transfer teaching lessons ... all it through a Research and Development Program.

Through this program, teaching teams can collaborate, work together, share and exchange experiences or contrasting ideas.

It could be channeled through virtual spaces created for this purpose, but also through the holding of meetings between interested members according to themes, areas, content, etc.

Raising funds for financing this research also search through programs, grants or aids.

5.7 Multidisciplinary team support

Throughout the design and development of MOOC teachers or teaching teams you can be found with many difficult obstacles to overcome and require the help of different professionals. These difficulties, in many cases, do they leave the course before you start.

The creation of a group or multidisciplinary support team for a set of universities would be an extraordinary incentive to encourage MOOCs generate much more easily, avoiding leaving the minor problem.

We encountered design problems, content creation, design of interactive materials (podcasts, videos, ...), basic knowledge of office automation, operating applications, search for information of adequate quality or a big waste of time by not find the information you really want. It is in this sense that play an essential role a number of support professionals who play a key role in facilitating the way in creating, in this case, the MOOCs.

If, as we have in perspective, form a large community of universities with a large number of teachers interested in making MOOCs, located under one platform that provides a range of hosting services, functionalities for creating courses and resources for design thereof, have the support of a number of professionals who provide assistance in tedious, difficult tasks and, with a little help can be easy to solve and get a much better result, it is a great support.

These professionals can include:

- Educators: as we saw in the training unit will offer advise and form in many different materials to teachers, create manual tracking, etc.
- Content Curator: performs the search, clustering and dissemination of information requested field. Handles a wide range of resources, sources and applications that open many possibilities for obtaining specialized and specific information.
- Reserchers: staff researcher specialized in preparing proposals for projects, grants, conduct research, groups, meetings, etc.
- Technicals: support and advise on technical issues when problems arise with the platform, management software or any application.
- Management Staff will be responsible for all management tasks specific students, teachers management, high, low, certificates, expenses, income, marketing, advertising, etc.

- Community Manager: This professional will perform management tasks image of community, the professionals who compose, universities that are part of it, of MOOCs taught, or manage the community around a brand on- line. It is a fundamental task for visibility and dissemination of courses and attracting more students.

Graphically we can observe the most basic relationships that can be established between the different elements and services that happen to combine a support unit.

All items and services are virtually interrelated. The proper functioning of one of the elements, influences proper functioning enrichment and other.

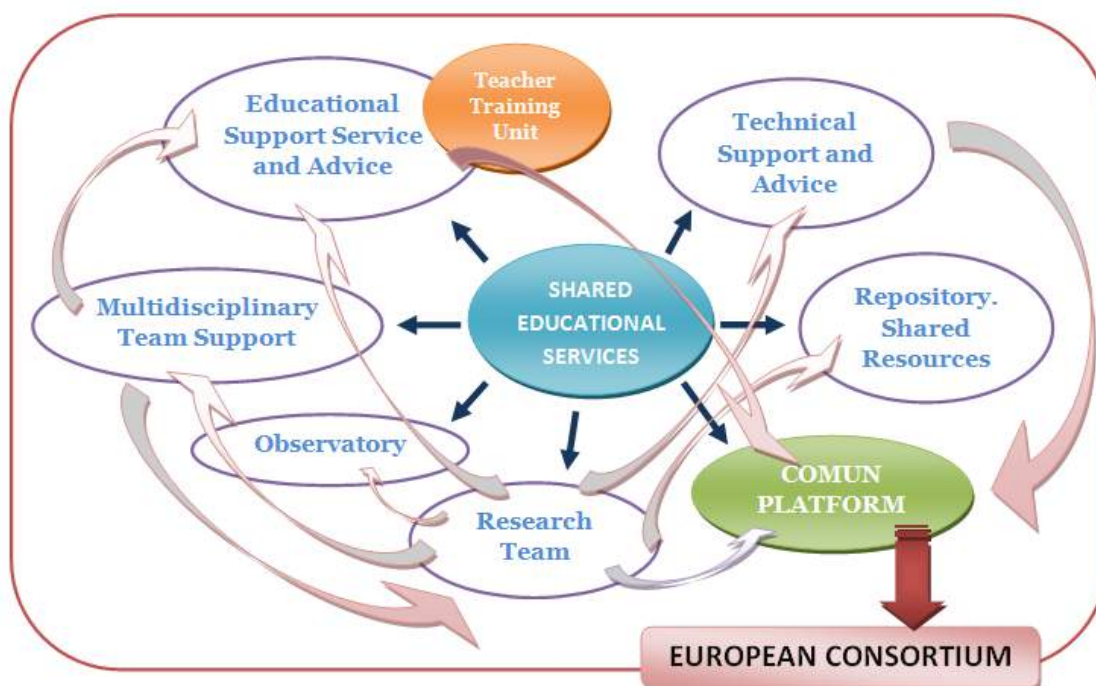


Figure 6:

Relations between all educational action lines and shared services in a European Consortium future collaboration for the creation and development of MOOCs.

Produced by Lourdes Pérez Sánchez.

6 Conclusions

As different sources have been consulted for the realization of this document, many doubts were clarified, but also born new ones. They emerged a number of approaches and issues, with certainty, they will be presented throughout the design MOOCs, and that during the development process thereof must be answered, and posing as future solutions. Among other issues we include:

- Would it be wise to put a starting price (enrollment / registration), though not high, the courses?
- Would it be appropriate to give greater character professionalizing courses?
- Would it be appropriate to give a more specific and concrete character issues to work on the courses, more defining the target student?
- Would it be appropriate to give greater pedagogical or didactic orientation courses? or do you create specific courses for teachers?
- What can you do to avoid high drop-out rate in the courses?
- Could we use these courses as extensions of our study materials official studies?

It will be the experience that offers answers and help shape the characteristics of the MOOCs offered by an institution or a consortium, according to the teachers involved, the resources you have obtained, the student profiles, and so on .

Moreover, this experience can be enhanced by the constant support and advice from a multidisciplinary team that offers help in times of greatest difficulty and tasks. Pedagogues, educational technologists, consultants, community managers, content curators or researchers may be defendants profiles for this job.

Also, note the need that current teachers, who dare to design, develop and implimentar one MOOC have to master certain skills and competencies technological cutting, goes beyond what is meant by standard, requiring for its part, an extra effort to update and catch up technologically. So much so, that many teachers do not engage in such initiatives due to lack of certain skills necessary for their implementation.

Finally, to say that carrying out a MOOC is a complex and laborious undertaking. Time-consuming planning and care during development. To provide a quality product have to take into account a number of criteria that draw a complex landscape made not only for the content to teach and work, but by supports, channels, resources, assessment criteria, sequencing, personal supports, technicians and many other relevant issues in the process.

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edX: <https://www.edx.org/>

MIT: <http://web.mit.edu>

MiriadaX: <https://miriadax.net/home>

Udacity: <https://www.udacity.com/>

Udemy: <https://www.udemy.com/>

Shared European Educational Services from the Perspective of Finland

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Abstract

Finland has a long, nationally widespread tradition of open universities and open universities of applied sciences. The Finnish open studies seem to differ from those of some other European countries, and they resemble surprisingly the concept of MOOCs in many respects. That could be one of the reasons why creating MOOCs has not become very popular in Finland.

From the Finnish perspective the need for shared European educational services goes beyond European MOOC platforms. This article suggests that also online courses other than MOOCs, as well as an open educational repository could be created and integrated into a European educational service. The interface of the integrated service should be localizable to different European languages.

Keywords

MOOC, MOOCs, online learning, Finland, eLearning, open university, open UAS

1 Finland on the European MOOCs Scoreboard

The Open Education Scoreboard (2015), administrated on the Open Education Europa website, and supposed to show the distribution of European MOOCs by country, gives a misleading impression on the number of MOOCs running in Finland.

When adjusting the timeslot of the Scoreboard between 1 Jan and 31 Dec 2015 in order to cover one full year, only one Finnish MOOC course can be found.



Figure 1: Misleading MOOC figures for Finland on the Open Education Scoreboard (2015).

On the MOOC platform **MOOC.fi** (2015) alone there were eleven live MOOCs running in November 2015. The MOOC.fi platform offers MOOCs by the two major Finnish universities only, University of Helsinki and Aalto University. In addition, other Finnish universities and Finnish universities of applied sciences (UASs) have created and implemented MOOCs. Experiences and best practices on the implemented MOOCs have been exchanged, for instance, in the Finnish Online University of Applied Sciences (FOUAS) network. Webinars have been arranged and lessons learnt from the Finnish MOOCs between Finnish educators and teachers¹⁵. From this perspective, we can bravely estimate that the number of MOOCs run in Finland during 2015 was about 20.

Considering that Finland has a population of 5.5 million people it does not seem to be very enthusiastic about MOOCs. Instead of MOOCs it is offering thousands of online courses, which do not comply with the MOOC format. In this article, we try to discover some of the reasons for this. We will also suggest European shared services, which might encourage European higher education to create more and better MOOCs and online courses.

2 Finnish Online University of Applied Sciences

Finnish Online University of Applied Sciences (FOUAS) has been a well-established network of 17 Finnish universities of applied sciences (UASs) until 2015. It was founded in 2001, and its major responsibility has been to provide a fixed procedure and a steady platform for virtual mobility between its member UASs in order that their degree students can take courses across the institutional borders. Practically all the courses on the FOUAS platform have been online courses. (FOUAS, 2016).

In the last few years FOUAS has had annually about 800 online courses on its course catalogue, which can be found at the amk.fi portal. However, the virtual mobility platform and course catalogue used ever since 2001 and updated in 2006, is getting out of date, and will be closed down in May 2016. This might create a fresh need for new shared online services. These services could also be European or international.

The FOUAS virtual mobility platform has always been a closed system in the sense that the degree program students at Finnish UASs only have had access to the courses. This practise has its roots in the fact that any degree program education in higher education institutions financed by the Finnish Ministry of Education and Culture has been tuition free for the students. Online learning makes no exception in this respect.

At the same time there is a parallel system of Finnish **Open universities and Open UASs** which offer courses - among them online courses - for the citizens and actually for anyone.

3 Open Universities and Open UASs in Finland

Finland has for years had its tradition of open universities and open UASs, which differs from that of many other European countries, and resembles surprisingly the concept of MOOCs in some respects.

According to the Finnish legislation, the fees for the Open University or Open UAS courses provided by higher education institutions financed by the Ministry of Education and Culture of Finland, must not exceed 15 euros per study credit (Finlex, 2014b; Finlex, 2014c). To give an example, the course fee of an online course of 3 ECTS in a Finnish Open University should not exceed 45 euros. An official

¹⁵ The writer of this article has been actively organizing and participating the FOUAS network webinars and events mentioned here.

certificate or a document of attendance is usually included in this nominal fee. When we compare the situation with “free” MOOCs that often charge a fee for a “signature track” or a course certificate, we realize that the Finnish online courses come very close to MOOCs.

Another peculiarity of the Finnish open universities and open UASs is that they offer courses of the same content as degree programs in higher education (Finlex, 2014). This becomes understandable from the standpoint that most Finnish open and online universities and UASs are administratively units of the campus universities. Courses taken at the open and online universities can easily be recognized and accredited in case the student gets accepted into a degree program. In other words, well performing open university students are encouraged to switch to the university degree programs. This is another resemblance with MOOCs, which can be used to attract the most talented students into campus university degree programs.

The question may arise, where the marked-led, business oriented, payable Finnish online courses can be found, as making profit in the Finnish Open Universities and Open UASs is strictly regulated. They certainly also exist, but mostly outside the Open Universities or Open UASs. The business oriented education implemented to gain profit can be referred to, for instance, as “extension studies”, “professional development courses” or “global education”.

As we see, Open universities and Open UASs in Finland are, in actual fact, non-profit. For this reason implicit conceptual misunderstandings may easily take place whenever a Finnish person is talking about an Open University with their foreign colleagues.

4 More space for shared services

Some of the previously existing consortia or networks of online education have closed down in Finland in the recent years, mostly due to financial reasons. The **Finnish Virtual University**, a network of the Finnish research universities was functional during the period 2001-2010 (Suomen Virtuaaliyliopisto, 2015). It used to offer a decent set of shared online learning services and tools for its network, but most of the services disappeared as the network ceased. Its counterpart among the Finnish UASs, **The FOUAS network (Suomen Virtuaaliammattikorkeakoulu)**, will be functional until 2017. As far as open education is concerned, the Finnish centralized **Open UAS** course catalogue and enrollment system at avoinammattikorkeakoulu.fi closed already in 2010.

However, one of the major hubs of online learning continues to exist: the course database of the Finnish Open Universities (Avoin yliopisto, 2015). Anyway, it seems obvious that closing down two wide national online learning consortia and the centralized hub of the Finnish Open UAS courses in Finland will inevitable create space and need for new shared online services.

5 Characteristics of the shared services

As we have learnt in the first sections of this article, the Finnish long and nationally widespread tradition of open online courses is not so different from MOOCs. However, typical online courses in Finland differ from MOOCs in the sense that only a limited number of participants are accepted to join the course.

From the Finnish perspective, the need for shared European educational services goes beyond MOOC platforms. Online courses other than MOOCs should be included in the shared course catalogues. A European educational repository could be created.

The need of a well designed metadata-based repository of European open educational resources (OER) is getting more urgent. Many publicly funded projects have an obligation to share and save

their project deliveries, outcomes and materials for a certain number of years. Many higher education institutions might be ready and willing to share their learning resources European-wide or globally, if only a repository that is easy to use, accessible and localized in their local languages would be available. Undoubtedly there are many other uses for a proper educational repository, but we have mentioned here just the ones that seem the most acute from the Finnish perspective.

Making a shared European service popular locally would require localization of at least the landing page and maybe a few other essential pages of the service into the local European languages. From the point of view of system design and maintenance it means that any shared European services should be easily localizable.

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Shared Services for MOOC Offerings: A Vision for Turkey

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Abstract

The purpose of this presentation is to introduce the approach contemplated for service sharing in MOOC offerings in Turkish educational milieu. First the definition and scope of shared services in educational enterprises are analyzed with emphasis in open online learning. After introducing the open educational initiatives in Turkish educational milieu the resources and the processes for MOOC offering are analyzed under the systems concept for the identification of service sharing potential.

Keywords

MOOCs, shared services

1 Introduction

Albeit new even in the corporate sector implementation of shared service has been articulated in the educational spheres frequently in recent years. In corporate sector shared services is defined as *“a business model that incorporates the common businesses of organizations”* such as (i) functions, (ii) services or (iii) processes that used to exist in more than one part of the organization or group, into one shared operation at a centralized location. The key objective of shared services model is to increase quality, productivity and cost efficiency by standardization and consolidation process and sharing of resources within multiple parts of the organization (MSC – Malaysia, 2012).

Traditionally the goal of a shared services delivery model is to allow each business division to focus its limited resources on activities that support the division’s business goals. This is accomplished by assigning the activities or processes that are non-strategic and outside of the core competency of the parent corporation to the shared business unit. However Bergeson (2003) states that in theory a shared business unit can handle any business function successfully, as long as there are adequate management and specific performance criteria. Yee et al. (2009) differ between intra-organizational and inter-organizational service sharing where the former is the traditional service sharing within an organization, the latter is the one across more than one organizations.

Marciniak (2012) mentions the following as most notable forms of shared services:

- Center of scaling: High volume, routine transactions through standardized processes.
- Center of excellence: Delivered services need deep and specialized knowledge.
- Business partnership: Delivered services need high communication and coordination skills, decision-sensitive and based on local/specific knowledge.

It must be noted that Information systems (IS) have dual relevance to shared services as both a support function amenable to the shared services arrangement and as a key enabler of shared services across other support functions (Miskon et al., 2012). As the concept of cloud computing becoming more prevalent, the feasibility of shared information services also becomes more strengthened. Hence Mathew (2012) identifies four types of cloud services amenable to sharing:

1) Infrastructure as a Service (IaaS): Can be used to satisfy the infrastructure needs of the students, faculties or researchers globally or locally with some specific hardware configuration for a specific task.

2) Platform as a Service (PaaS): Certain providers are opening up application platforms to permit customers to build their own application without the cost and complexity of buying and managing the underlying hardware and software layers.

3) Software as a Service (SaaS): The application service provider is hosting the application which runs and interacts through web browser, hosted desktop or remote client. It eliminates the need to install and run the application on customer own computer and simplifying maintenance and support.

4) Computing as a Service (CaaS): Providers offer access to raw computing power on virtual server such as Amazons, EC2 service.

2 Service Sharing in Educational Context

Miskon et al. (2011) cite the literature about the appropriateness of universities for the implementation of shared services due to the homogeneous business requirements (compared to other sectors) and the strong impetus to common influences across higher education sector worldwide. They point out that there are environmental drivers such as continuing growth in student numbers, changes in the nature of academic work, increasing competition, government pressure for improvement in the operational efficiency.

Deloitte (2011) also states that the potential for shared services is broad and ever expanding and gives an illustrative set of examples as shown in Figure 1 , comprising both back office activities, and others specific to the higher education sector.



Figure 1: Phases of MOOC Initiative (Deloitte, 2011)

Shared services in higher education usually fit into one of two categories. Firstly, those aiming to improve efficiency - which focus on economies of scale and purchasing power. Secondly, those which

aim to address the ‘critical mass’ issue - universities often cannot afford a large team in certain very specialist areas (Leadership Foundation, 2015).

There is considerable scope for shared services across higher education. Miskon et al. (2011) identified eight shared service types as follows: (1) Intra-organizational shared services, (2) Intra-organizational shared services (with third party), (3) Inter-organizational shared services, (4) Inter-organizational shared services (with third party), (5) Internal Shared Service Center (SSC), (6) Internal SSC (with third party), (7) SSC Alliances/Consortium and (8) SSC Alliances/Consortium (with third party).

Some other examples from UK are; the shared admissions facility (UCAS: Universities and Colleges Admissions Service), JANET (joint education and research services network, the M25 Consortium of Academic Libraries (Leadership Foundation, 2015). Chazey Partners (2014) lists examples of shared services in the US including Yale University, Harvard College, University of Michigan, University of Illinois and Cornell. In Finland, the government has, inter alia, set up and funded a shared service center (Certia) providing finance, payroll, HR and IT services for 9 universities.

MOOCs, the last chain of online learning episode is also subject to shared service evaluation. HOME project which aims to *"develop and strengthen an open network for European cooperation on open education in general and MOOCs in particular"* has the theme of *"shared services in European MOOC context"* in her agenda. Hence Santos et al. analyze the need for a shared Europe MOOC platform which aggregates the contributes of the actual initiatives and provide a scaffold for the series of shared services like registration, single sign-on, LMS integration and partner agreements on badge credit transfer and/or networked curricula.

3 Shared Services for MOOC Provision in Turkey

3.1 MOOCs Initiative in Turkey

With the exception of few unsuccessful attempts, the acquaintance of Turkish higher educational milieu with open and distance learning had not been realized until the establishment of Anadolu University open Education System in 1982. Nevertheless open education system thrived to mega university status right at the second year of inauguration and produced more than 2,4 million graduates since then. Currently besides the 35.000 conventional education students, the university hosts about 1.350. 000 distance education students which corresponds to the 40% of total higher education enrolment in the country. It was only after 2000 that other universities are allowed to offer online programs by the Council of Higher Education Turkey (CoHE). Today, with the addition of two open education faculties, about one third of traditional universities offer online undergraduate and graduate programs with a total of around 150.000 students.

The introduction of open educational initiatives to Turkish Higher Education system started in 2007 with the joint efforts of CoHE and Turkish Academy of Sciences (TÜBA) and Open Education Consortium Turkey has been established with the involvement of 45 universities. Open Courseware for 82 courses are developed and/or translated within a project and is being under creative common license. <http://www.acikders.org.tr/>. There are 8 universities with open course portals.

Turkey is at the early phases of acquaintance with MOOCs. AtademiX is the first and only MOOC platform created in 2015 by Ataturk University of Erzurum which also joined to the Open Education Europe network. The number of MOOCs offered by AtademiX has reached to 16 by the end of year. Koç University of Istanbul joined to Coursera network and mediated for the provision of some courses with Turkish subtitles. (<https://www.coursera.org/koc>). Khan Academy is also providing Turkish translations of more than five thousand course videos (<http://www.khanacademy.org.tr/>).

Universiteplus is a for profit platform offering courses with a small fee(universiteplus.com). Anadolu University is making preparations to offer MOOCs for domestic and international learners.

3.2 Shared Services for MOOCs

Akin to open university decision, initiating a MOOC project is a macro decision that must be evaluated in national and international contexts. As shown in Fig.2 such an initiative is comprised of three major phases each of which must be accomplished with extreme care.

There is not a single university or educational institutions that has resources and expertise to establish a MOOC initiative. Hence service sharing seems inevitable in Turkey for the implementation of MOOCs for harvesting the benefits.

Anadolu University, with a 40 years of experience in distance learning, the experienced academic and technical staff, and the enormous amount of content available aims to serve as an excellence center for the MOOC provision in Turkey.

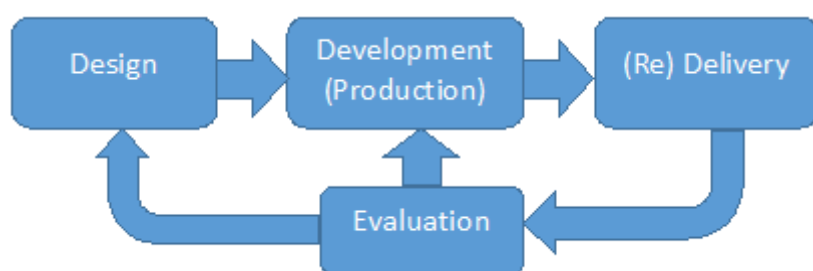


Figure 2: Phases of a MOOC Initiative

For a national MOOC project to be launched by Anadolu University, all the types of shared services described by Marciniak (2012) can be utilized as described and exemplified at Table-1.

Type	Description	Examples
Center of scaling	high volume, routine transactions through standardized processes	registration, online testing, online assignments
Center of excellence	delivered services need deep and specialized knowledge	course design, learning analytics, knowledge management, recognition of prior learning, disability support systems
Business partnership	delivered services need high communication and coordination skills, decision-sensitive and based on local/specific knowledge, glocalization	tutoring, face to face teaching, proctored testing, laboratory practices.

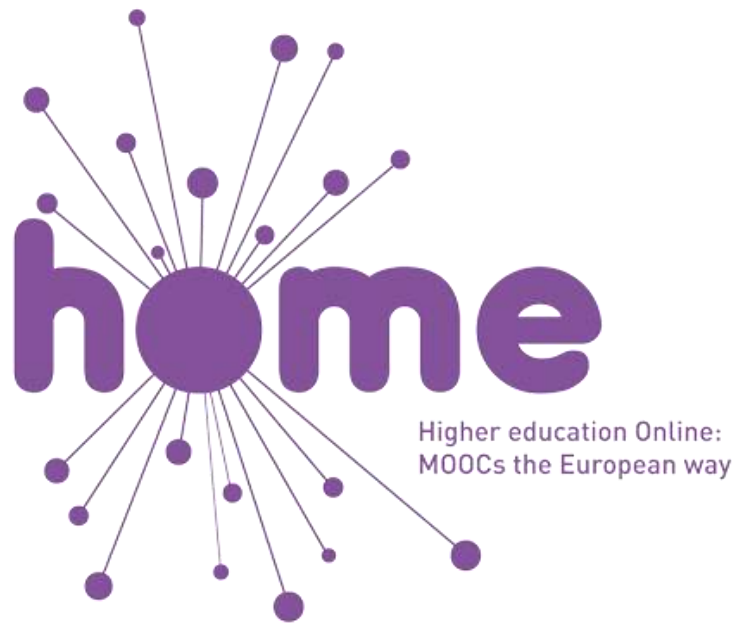
Table 1: Types of shared services (Adapted from Marciniak, 2012)

4 Conclusions

Online Learning is becoming the educational paradigm of the digital age. Online courses (MOOCs, SOOCs, SPOCs, etc.) are prospering as the new delivery model in higher education. Collaboration is essential for fulfilling the needs of diverse and remote learners. Shared services is a viable model for collaboration between institutions for online courses. Once supported with the legislative actions MOOCs are expected to initiate a paradigm shift in Turkish higher education system.

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